NOTICE TO CONTRACTORS: This is to alert you to new changes in Section 00600 – Reps and Certs. . .Effective 01 January 2005, FAR clause 52.204-8 was added to Section 00600 and replaces most of the clauses you are used to seeing. You are now required to electronically complete your Reps and Certs information thru https://orca.bpn.gov , in addition to completing fill-information in clauses that are now/still part of Section 00600.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		1

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
R0001	07 Feb 05		

6. ISSUED BY CODE W911KB

US ARMY ENGINEER DISTRICT, AK
CEPOA-CT (W911KB)
PO BOX 6898
ELMENDORF AFB, AK 99506-6898

JAMES HOLLOWAY (907)753-2528

7. ADMINISTERED BY *(If other than Item 6)* CODE W911KB

US ARMY ENGINEER DISTRICT, AK
CEPOA-CO-NAO
PO BOX 35066 (BLDG 3025)
FAIRBANKS, ALASKA 99703-0066

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE 089C4 FACILITY CODE

(X) 9A. AMENDMENT OF SOLICITATION NO.

X W911KB-05-B-0001

9B. DATED *(SEE ITEM 11)* 01/13/05

10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 0 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting and Appropriation Data *(If required)*

PROJECT TITLE AND LOCATION: UTILIDOR REPAIR, FT WAINWRIGHT, ALASKA (FTW288)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc).* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

BID OPENING DATE IS 15 FEB 05, 2:00 pm, local time, at the US Army Corps of Engineers, 2204 Third Street, Elmendorf AFB, Alaska.

NOTICE TO OFFERORS: PLEASE MARK OUTSIDE OF ENVELOPE IN WHICH BID IS SUBMITTED TO SHOW AMENDMENTS RECEIVED. YOU ARE REQUIRED TO ACKNOWLEDGE RECEIPT OF THIS AMENDMENT ON THE REVERSE SIDE OF STANDARD FORM 1442.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF SIGNER *(Type or print)*	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY *(Signature of Contracting Officer)*	

a. The following drawing is substituted for the superseded drawing and revised as indicated.

Drawing No. F-893-40-02, Ref No. C1.01
F-893-40-02, Ref No. C3.05.5
F-893-40-02, Ref No. C3.05.8
F-893-40-02, Ref No. C3.20.3
F-893-40-02, Ref No. C3.20.4
F-893-40-02, Ref No. C3.22.1
F-893-40-02, Ref No. C3.22.2
F-893-40-02, Ref No. C3.22.3
F-893-40-02, Ref No. C3.22.4
F-893-40-02, Ref No. C4.02
F-893-40-02, Ref No. C4.06
F-893-40-02, Ref No. C5.01.3
F-893-40-02, Ref No. E1.05
F-893-40-02, Ref No. S1.02

b. The following revised documents are substituted for the superseded documents. The identifier "AM #1" appears before and after new and revised material, except as noted below.

TECHNICAL SPECIFICATIONS:

SECTION 01015
Paragraph 1.9 UTILITY OUTAGES – FORT WAINWRIGHT
Paragraph 1.25 SCHEDULING OF WORK

SECTION 01721
Paragraph 1.3 AUTOCAD SCHEMATICS

SECTION 16402
Paragraph 2.10.1 Enclosure

NOTE: Revisions within the following documents do not contain the above referenced identifiers.

NONE

c. The following section (including submittal register is deleted.

NONE

d. The following section (including submittal register is added.

NONE

e. NOTICE TO BIDDERS: PLEASE MARK OUTSIDE OF ENVELOPE IN WHICH BID IS SUBMITTED TO SHOW AMENDMENTS RECEIVED. YOU ARE REQUIRED TO ACKNOWLEDGE RECEIPT OF THIS AMENDMENT ON THE REVERSE SIDE OF STANDARD FORM 1442.

SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NUMBER	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
	W911KB-05-B-0001	☒ SEALED BID *(IFB)* ☐ NEGOTIATED *(RFP)*	01/13/05	

IMPORTANT - The "offer" section on the reverse must be fully completed by the offeror.

4. CONTRACT NUMBER	5. REQUISITION/PURCHASE REQUEST NUMBER	6. PROJECT NUMBER

7. ISSUED BY	CODE	8. ADDRESS OFFER TO
US ARMY ENGINEER DISTRICT, ALASKA CEPOA-CT-CM (W911KB) PO BOX 6898 ELMENDORF AFB, AK 99506-6898	W911KB	SEE ITEM 7

9. FOR INFORMATION CALL ▶	A. NAME	B. TELEPHONE NUMBER *(Include area code) (NO COLLECT CALLS)*
	James Holloway	(907)753-2528

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying number, date):*

NAICS: 237990
PROJECT TITLE/LOCATION:Utilities Upgrade, Ft Wainwright, Alaska
COMPETITIVE 8(A) SET-ASIDE
DESCRIPTION OF WORK: This is a competitive 8(a) set-aside solicitation that is limited or restricted geographically to the Alaska Small Business Administration District servicing area. All 8(a) certified firms serviced by the Alaska District Office or all 8(a) certifiedfirms with a bona fide place of business in the Alaska District Office are deemed eligible to submit offers. Competition will not be restricted by stage (transitional or developmental) of 8(a) program participation. Project consists of repairing approximately 3650 feet of utilidor systems on Ft Wainwright, located in Fairbanks, Alaska. Repairs include complete replacement of sewer, water, steam and condensate lines within existing utilidor structures on Santiago Avenue, including service to buildings. Work will also include enlargement of some existing manholes and asbestos abatement. Responders are advised that this requirement may be delayed, canceled, or revised at any time during the solicitation, selection, evaluation, negotiation, and/or final award process based on deicsions related to DoD changes. Solicitation will be provided free of charge on our website - https://ebs.poa.usace.army.mil/AdvertisedSolicitations.asp

**CONTRACT AWARD WILL BE SUBJECT TO AVAILABILITY OF FUNDS (See 52.232-18)

11. The Contractor shall begin performance within 10 calendar days and complete it within AM#1 .. 545 ~~444~~ .. AM#1 calendar days after receiving

☐ award, ☒ notice to proceed. This performance period is ☒ mandatory, ☐ negotiable. *(See* 52.211-10 .*)*

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)*	12B. CALENDAR DAYS
☒ YES ☐ NO	10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 1 copies to perform the work required are due at the place specified in Item 8 by 2:00 pm *(hour)* local time 15 Feb 2005 *(date)*. If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee ☒ is, ☐ is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

a. Any further questions regarding the Invitation For Bid (IFB) must be received by the Government Point of Contact listed in Block 9 of Standard Form 1442, James E. Holloway, (907)753-2528, e-mail: james.e.holloway@poa02.usace.army.mil not later than 11:00 a.m., AST, February 8, 2005, to allow adequate time to prepare and publish the Government responses prior to invitation closing.

1. QUESTION: Sheet E1.01 note 3 states all Junction boxes shall be cast Aluminum, but sheet 1.04 shows alarm boxes to be fiberglass. Can we assume that boxes for power and lighting are to be cast aluminum and the alarm boxes are fiberglass?

ANSWER: Assume boxes for power and lighting to be cast aluminum and boxes for alarm to be fiberglass.

2. QUESTION: Sheet E1.05 for option 4 doesn't show lighting between manholes. Are lights required between I5-4-5 and I5-4-6; I5-4-6 and I5-4-7; I5-4-7 andI5-4-8?

ANSWER: Lights are not required between manholes I5-4-5 and I5-4-6, I5-4-6 and I5-4-7, and I5-4-7 and I5-4-8.

3. QUESTION: Specification Section 02559 Heat Distribution 2.1.4 Electrical work states Motors, control and protective or signal devices provided under this section. The electrical spec Section 16402 2.11 Motors, says provide the size in terms of HP of each motor as indicated or specified. Section 2.11.3 says to provide size for duty to be performed. Section 2.12 Motor Controllers says (in the second sentence) to provide controllers. Drawing E1.09 Condensate Pump Detail gives reference to the Mechanical Specs for additional detail. Usually the mechanical contractor provides the motors and also the motor starters to match the motors. Is the intent for Mechanical to provide motors and controllers and the electrical to provide disconnect switches?

ANSWER: The only requirement that we have is that the motors and controllers should be provided by the same supplier. The units specified in this project are packaged units and should be supplied together. It would be acceptable for the Mechanical to provide motors and controllers and the Electrical to provide disconnect switches.

4. QUESTION: Specification Section 2.10.1 Enclosures for Panelboards states cabinets mounted outdoors will be hot dipped after fabrication with conduit hubs welded to cabinet. This is an extra expensive way to go and not a readily available option. Also this type of outdoor panel has not been used on recent projects. What has been typical is a Nema 3R cabinet and use of bullet type hubs where conduits enter the tops or sides of cabinets or panels.

ANSWER: Use standard NEMA 3R cabinets with standard hubs

5. QUESTION: Is it the Governments intent to insulate this power line for 24.9? Your construction type calls for "V" units from the RUS book.

ANSWER: The maximum voltage level in this project is 15KV. 24Kv insulation is not required

6. QUESTION: Is all power work to be done hot or is there allowance for power outages on existing taps?

ANSWER: Section 01015-Special Items, paragraph 1.9- Utility Outages, Fort Wainwright describes procedure for power outages. However, hot line work is acceptable. To allow hot line work add at the end of the paragraph the following statement: " High voltage line work with

energized lines (hot line work) is acceptable with proper qualifications from contractor and with clearance from Fort Wainwright Electric Utility department."

7. QUESTION: Will the owner change all references of the word "prevent" in the references above to the word "limit" as it appears that the intent is to limit the flow not stop the flow?

ANSWER: The intent of the barrier is not to prevent the flow of water or air, but rather, to prevent the flow of the original asbestos containing building materials from migrating from a contaminated utilidoor segment to a cleaned segment. The designed barrier should adequately prevent the migration of the original asbestos containing building materials, and, should be constructed accordingly. Therefore, the word prevent in the referenced specification is valid and will remain as is.

8. QUESTION: Work completion time, Clause 52.211-10 completion of work by 31 October 06 except for seeding. Does this mean seeding can happen in the spring of 2007?

ANSWER: Yes

9. QUESTION: Site Safety and Health Officer- Section 01525-1.6.1.1, The requirements at this level will drive the price of project up around $200,000.00. The requirements for this type of project in this area have not been this high in the past. Do you want to keep the requirements at this level?

ANSWER: Yes

10. QUESTION: Earth work – Section 02300. Can we assume that the existing fill under the paved areas will meet the fill requirements for backfill in those same areas?

ANSWER: Don't assume that existing fill will meet requirements.

11. QUESTION: Groundwater – Section 02300-3.3.2, Can we assume that there will be no dewatering required because of groundwater?

ANSWER: Dewatering is not anticipated. Use good construction practice to avoid needless excavation into the groundwater.

12. QUESTION: SSPC QP1 Certification – Section 09900-1.3.1, This certification will drive the price of the project up considering there is only 1 certified contractor in the state of Alaska and they are not located in Fairbanks. The previous similar projects have not required this certification. Are you going to keep this requirement?

ANSWER: The requirement for SSPC QP1 is deleted.

13. QUESTON: Bid Item 1 and Scope of Work Base Bid – These descriptions do not seem to include the following manholes and utilidor sections: I5-4-7, I5-4-8, I5-4-4, and I5-4-6. The civil drawings show existing and new work to be done in these areas. Are these areas to be included in this project? If so what bid item are they to be included in?

ANSWER: MH I5-4-6, I5-4-7, and I5-4-8 are in bid item 0005 (Option 4). See sheet C2.01 for demarcation line. MH I5-4-4 is not in the project. See sheet C2.01 for stop work marker.

14. QUESTION: Specification 01721-1.3e. has the incorrect web address, username, and password for photos on this project. Please have this corrected so bidders can find the photos they need to review this project.

ANSWER: See amended section 01721, attached. The correct website information (which is only part of the corrections to TS01721) should read:

website: http://iss.poa.usace.army.mil/projects/ftw288
username: ftw288
password: Santiago Ave.

Please note that the username and password are case sensitive, and the password includes one space, and one period.

15. QUESTION: Will a site visit be arranged?

ANSWER: A site visit will not be arranged. Bidders can gain access to the installation to view the proposed area but access to manholes is not provi ded. Pictures of the utilidors can be viewed at website: http://iss.poa.usace.army.mil/projects/ftw288, username: ftw288, password: Santiago Ave.

16. QUESTION: Drawing C3.22.3 – New water/sewer plan: MH H5-4-4 indicates “Preinsulated 6” Direct Buried Water”. We are unable to locate a specification for this material.

ANSWER: The drawing is revised and incorporated with this amendment.

17. QUESTION: Drawing C3.20.3 – New Steam/Condensat e Plan: MH H%-7-4 indicates 16” Expansion Joint (EJ-003). We believe this should be (EJ-013). Is this correct?

ANSWER: Yes, it should be EJ-013.

18. QUESTION: Schedule 444 Days is of concern. Please review the following scenarios:

a. If the Corps should make an expedited award and NTP say by April 1, 2005, would be unable to obtain the piping materials until at least August 1, 2005 allowing 16 week for delivery of large fittings. This date does not include time for submittals. Consequently, not enough work could be completed in the 2005 season to finish the work in the 2006 season, as there would be only have 79 days after April 1, 2006 to finish the contract.

b. If the Corps should award in 60 days, NTP May1, 2005 there probably would be some work accomplished in the 2005 season, however not enough due to delivery of materials, to finish the project in 79 days (Mid July 2006) after May1 2006.

c. In either scenario, there is not enough time allowed in the summer season 2006 to complete the project. If we could be presumptuous, we believe that if a fixed completion date is selected after the summer season in 2006 and allow time for landscaping to be complete in 2007 is a more doable schedule, and will allow for your expiated or normal award and NTP.

ANSWER: FAR Clause 52.211-10 assumes that the Notice to Proceed will be issued by April 4, 2005. The duration of contract is changed to 545 days. The ending period of performance is changed to October 1, 2006.

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY FULL TEXT

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2005)

(a)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (b) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (b) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(__) Paragraph (b) applies.

(__) Paragraph (b) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(b) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (SEP 2004)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries subject to this provision include: Cuba, Iran, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

____ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

____ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or

subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than **AM#1..** ~~31~~ 01 October 2006**...AM#1**, except for seeding and landscaping may be accomplished in accordance with Section 02921, paragraph 3.1.1. *The time stated for completion shall include final cleanup of the premises.

The completion date is based on the assumption that the successful offeror will receive the Notice to Proceed by 04/04/05. The completion date will be extended by the number of calendar days after the above date that the Contractor receives the Notice to Proceed, except to the extent that the delay in issuance of the Notice to Proceed results from the failure of the contractor to execute the contract and give the required performance and payment bonds within the time specified in the offer.

(End of clause)

W911KB-05-B-0001

SECTION 00700a
General Wage Decision AK030001
(Dated (06/13/2003)
Modification Record:

No.	Publication Date
0	06/13/2003
1	11/28/2003
2	02/06/2004
3	03/05/2004
4	04/02/2004
5	04/16/2004
6	05/14/2004
7	06/18/2004
8	07/23/2004
9	08/06/2004
10	08/20/2004
11	09/10/2004
12	10/01/2004
13	10/15/2004
14	10/22/2004
15	12/10/2004
16	01/21/2005

General Decision Number: AK030001 01/21/2005 AK1

Superseded General Decision Number: AK020001

State: Alaska

Construction Types: Building and Heavy

Counties: Alaska Statewide.

BUILDING AND HEAVY CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	06/13/2003
1	11/28/2003
2	02/06/2004
3	03/05/2004
4	04/02/2004
5	04/16/2004
6	05/14/2004
7	06/18/2004
8	07/23/2004
9	08/06/2004
10	08/20/2004
11	09/10/2004
12	10/01/2004
13	10/15/2004
14	10/22/2004
15	12/10/2004
16	01/21/2005

ASBE0097-001 01/01/2004

	Rates	Fringes
Asbestos Workers/Insulator (includes application of all insulating materials protective coverings, coatings and finishings to all types of mechanical systems)	$ 29.63	9.42

ASBE0097-002 01/01/2004

	Rates	Fringes
Hazardous Material Handler (includes preparation, wetting, stripping, removal scrapping, vacuming, bagging, and disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems)	$ 26.45	9.42

BOIL0502-002 01/01/2004

	Rates	Fringes
Boilermaker	$ 33.98	16.62

BRAK0001-002 09/01/2004

	Rates	Fringes
Bricklayer, Blocklayer, Stonemason, Marble Mason, Tile Setter, Terrazzo Worker	$ 30.88	12.80
Tile & Terrazzo Finisher	$ 25.45	12.80

CARP1243-003 09/01/2004

North of the 63rd Parallel

	Rates	Fringes
Carpenter/Lather/Drywall Applicator	$ 31.40	13.51
Carpenter: Fire or Flood Repair Work	$ 31.98	13.51
Millwright	$ 32.37	13.10

CARP1281-004 09/01/2004

SOUTH OF 63RD PARALLEL

	Rates	Fringes
Acoustical Applicator and Lather	$ 29.08	13.65
Carpenters & Drywallers	$ 29.08	13.65
Millwright	$ 32.37	13.10

CARP2520-003 08/01/2004

	Rates	Fringes
Diver		
Stand-by	$ 33.78	12.70
Tender	$ 32.78	12.70
Working	$ 67.56	12.70
Piledriver		
Carpenter	$ 30.30	12.70
Piledriver; Skiff Operator and Rigger	$ 29.14	12.70
Sheet Pile Stabber	$ 30.14	12.70
Welder	$ 30.90	12.70

ELEC1547-004 05/01/2004

	Rates	Fringes

Cable splicer	$ 34.17	3%+13.85
Electrician;Technician	$ 32.42	3%+13.85

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* ELEC1547-005 01/03/2005

Line Construction

	Rates	Fringes
Cable splicer	$ 38.25	3%+16.90
Linemen (Including Equipment Operators, Technician)	$ 36.50	3%+16.90
Powderman	$ 34.50	3%+16.90
Tree Trimmer	$ 25.30	3%+16.90

ELEV0019-002 01/01/2004

	Rates	Fringes
Elevator Mechanic	$ 37.695	10.765+a

FOOTNOTE: a. Employer contributes 8% of the basic hourly rate for over 5 year's service and 6% of the basic hourly rate for 6 months to 5 years' of service as vacation paid credit. Seven paid holidays: New Year's Day; Memorial Day; Independence Day; Labor Day, Thanksgiving Day; Friday after Thanksgiving and Christmas Day

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ENGI0302-002 07/01/2004

	Rates	Fringes
Power equipment operators:		
GROUP 1	$ 32.67	11.55
GROUP 1A	$ 34.21	11.55
GROUP 2	$ 32.00	11.55
GROUP 3	$ 31.37	11.55
GROUP 4	$ 25.95	11.55

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Roller; Back Filler; Barrier Machine (Zipper); Batch Plant Operator: Batch and Mixer over 200 yds.; Beltcrete with power pack and similar conveyors; Bending Machine; Boat Coxwains; Bulldozers; Cableways, Highlines and Cablecars; Cleaning Machine; Coating Machine; Concrete Hydro Blaster; Cranes-45 tons and under or 150 foot boom and under (including jib and attachments): (a) Shovels, Backhoes, Draglines, Clamshells; Gradalls-3 yards and under; (b) Hydralifts or Transporters, all track or truck type,(c) Derricks; Crushers; Deck Winches-Double Drum; Ditching or Trenching Machine (16 inch or over); Drilling Machines, core, cable, rotary and exploration; Finishing Machine Operator, concrete paving, Laser Screed, sidewalk, curb and gutter machine; Helicopters; Hover Craft, Flex Craft, Loadmaster, Air Cushion, All Terrain

Vehicle, Rollagon, Bargecable, Nodwell Sno Cat; Hydro Ax: Feller Buncher and similar; Loaders: Forklifts with power boom and swing attachment, Overhead and front end, 2 1/2 yards through 5 yards, Loaders with forks or pipe clamps, Loaders, elevating belt type, Euclid and similar types; Mechanics, Bodyman; Micro Tunneling Machine; Mixers: Mobile type w/hoist combination; Motor Patrol Grader; Mucking Machines: Mole, Tunnel Drill, Horizontal/Directional Drill Operator, and/or Shield; Operator on Dredges; Piledriver Engineers, L. B. Foster, Puller or similar Paving Breaker; Power Plant, Turbine Operator, 200 k.w. and over (power plants or combination of power units over 300 k.w.); Sauerman-Bagley; Scrapers-through 40 yards; Service Oiler/Service Engineer; Sidebooms-under 45 tons; Shot Blast Machine; Spreaders, Blaw Knox, Cedarapids, Barber Greene, Slurry Machine; Sub-grader (Gurries, C.M.I. and C.M.I. Roto Mills and similar types); Tack tractor; Truck mounted Concrete Pumps, Conveyor, Creter; Water Kote Machine; Unlicensed off road hauler

GROUP 1A: Cranes-over 45 tons or 150 foot (including jib and attachments): (a) Shovels, backhoes, draglines, clamshells-over 3 yards, (b) Tower cranes; Loaders over 5 yds.; Motor Patrol Grader (finish: when finishing to final graders and/or to hubs, or for asphalt); Power Plants: 1000 k.w. and over; Quad; Screed; Sidebooms over 45 tons; Slip Form Paver C.M.I. and similar types; Scrapers over 40 yards

GROUP 2: Batch Plant Operators: Batch and Mixer 200 yds. per hour and under; Boiler-fireman; Cement Hog and Concrete Pump Operator; Conveyors (except as listed in group 1); Hoist on steel erection; Towermobiles and Air Tuggers; Horizontal/Directional Drill Locator; Loaders, Elevating Grader, Dumor and similar; Locomotives: rod and geared engines; Mixers; Screening, Washing Plant; Sideboom (cradling rock drill regardless of size); Skidder; Trencing Machine under 16 inches.

GROUP 3: "A" Frame Trucks, Deck Winches: single power drum; Bombardier (tack or tow rig); Boring Machine; Brooms-power; Bump Cutter; Compressor; Farm tractor; Forklift, industrial type; Gin Truck or Winch Truck with poles when used for hoisting; Grade Checker and Stake Hopper; Hoist, Air Tuggers, Elevators; Loaders: (a) Elevating-Athey, Barber Green and similar types (b) Forklifts or Lumber Carrier (on construction job site) (c) Forklifts with Tower (d) Overhead and Front-end, under 2 1/2 yds. Locomotives:Dinkey (air, steam, gas and electric) Speeders; Mechanics (light duty); Mixers: Concrete Mixers and Batch 200 yds. per hour and under; Oil, Blower Distribution; Post Hole Diggers, mechanical; Pot Fireman (power agitated); Power Plant, Turbine Operator, under 300 k.w.; Pumps-water; Rig oiler/assistant engineer, over 45 ton, over 3 yards or over 150 foot boom; Roller-other than Plantmix; Saws, concrete; Straightening Machine; Tow Tractor

GROUP 4: Rig Oiler/Assistant Engineer (Advances to Group

III if over 45 tons or 3 yards or 150 ft. boom); Swamper (on trenching machines or shovel type equipment); Spotter; Steam Cleaner

FOOTNOTE: Groups 1-4 receive 10% premium while performing tunnel or underground work.

IRON0751-003 09/01/2004

	Rates	Fringes
Ironworkers:		
BRIDGE, STRUCTURAL, ORNAMENTAL, REINFORCING MACHINERY MOVER, RIGGER, SHEETER, STAGE RIGGER, BENDER OPERATOR	$ 28.70	15.05
FENCE, BARRIER AND GUARDRAIL INSTALLERS	$ 25.20	14.80
GUARDRAIL LAYOUT MAN	$ 25.94	14.80
HELICOPTER, TOWER	$ 29.70	15.05

LABO0341-005 08/01/2004

	Rates	Fringes
Laborers:		
GROUP 1	$ 25.22	12.21
GROUP 2	$ 26.00	12.21
GROUP 3	$ 26.68	12.21
GROUP 3A	$ 29.18	12.21
GROUP 4	$ 17.27	12.21
TUNNELS, SHAFTS, AND RAISES		
GROUP 1	$ 27.74	12.21
GROUP 2	$ 28.60	12.21
GROUP 3	$ 29.35	12.21
GROUP 3A	$ 32.10	12.21

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Workers (shovelman, plant crew); Brush Cutters; Camp Maintenance Laborer; Carpenter Tenders; Choke Setters, Hook Tender, Rigger, Signalman; Concrete Laborer(curb and gutter, chute handler, grouting, curing, screeding); Crusher Plant Laborer; Demolition Laborer; Ditch Diggers; Dump Man; Environmental Laborer (asbestos (limited to nonmechanical systems), hazardous and toxic waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk and Utilidor Laborer; Watchman

(construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleman, vibratorman); Environmental Laborer (marine work); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Guardrail Machine Operator; Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds); Mason Tender and Mud Mixer (sewer work); Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Bit Grinder; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); High Rigger and tree topper; Higher Scaler; Pioneer Drilling and Drilling Off Tugger (all type drills); Powderman; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Grade checker (setting or transfering of grade marks, line and grade); Pipelayers

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Laser Instrument Operators; Nozzleman, Pumpcrete or Shotcrete; Pipelayers.

GROUP 3: Miner; Miner; Retimberman

GROUP 3A: Powderman

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

PAIN1140-004 07/01/2004

SOUTH OF THE 63RD PARALLEL

	Rates	Fringes
Painters:		
Brush, Roller, Sign, Paper and Vinyl, Swing Stage, Hand Taper/Drywall, Structural Steel, and Commercial Spray	$ 23.79	12.89

Machine Taper/Drywall	$ 23.99	12.89
Spray-Sand/Blast, Epoxy and Tar Applicator	$ 24.59	12.89
Steeple Jack & Tower	$ 25.59	12.89

PAIN1140-005 09/01/2004

	Rates	Fringes
Soft Floor Layer	$ 27.07	8.87

* PAIN1140-006 01/01/2005

SOUTH OF THE 63RD PARALLEL

	Rates	Fringes
Glazier	$ 28.00	12.60

PAIN1555-004 09/01/2004

NORTH OF THE 63RD PARALLEL

	Rates	Fringes
Hazardous Material Applicator LEAD BASED PAINT ABATEMENT, RADON MITIGATION, SANDBLAST, STRUCTURAL STEEL, TAPING, TEXTURING	$ 28.50	13.99
Painter BRUSH, BUFFER OPERATOR, FLOOR-COVERER, POT TENDER, ROLL SPRAY, WALLCOVERER	$ 28.00	13.99

PAIN1555-005 06/01/2004

NORTH OF THE 63RD PARALLEL

	Rates	Fringes
Glazier	$ 27.60	12.07

PLAS0867-001 09/01/2004

	Rates	Fringes
Plasterer		
NORTH OF THE 63RD PARALLEL	$ 30.39	11.51
SOUTH OF THE 63RD PARALLEL	$ 30.14	11.51

PLAS0867-003 04/01/2004

	Rates	Fringes
Cement Mason		

NORTH OF THE 63RD PARALLEL	$ 29.54	11.51
SOUTH OF THE 63RD PARALLEL	$ 29.29	11.51

PLUM0262-002 07/01/2004

East of the 141st Meridian

	Rates	Fringes
Plumber; Steamfitter	$ 29.09	12.05

PLUM0367-002 07/01/2004

South of the 63rd Parallel

	Rates	Fringes
Plumber; Steamfitter	$ 31.30	13.62

PLUM0375-002 07/01/2004

North of the 63rd Parallel

	Rates	Fringes
Plumber; Steamfitter	$ 35.16	15.45

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* PLUM0669-002 01/01/2005

	Rates	Fringes
Sprinkler Fitter	$ 33.20	13.25

ROOF0190-002 09/01/2004

	Rates	Fringes
Roofer (including Built Up, Composition and Single Ply)		
North of the 63rd Parallel	$ 31.62	10.00
South of the 63rd Parallel	$ 29.62	10.00

SHEE0023-003 07/01/2004

South of the 63rd Parallel

	Rates	Fringes
Sheet Metal Worker	$ 32.58	13.31

SHEE0023-004 07/01/2004

North of the 63rd Parallel

	Rates	Fringes
Sheet Metal Worker	$ 35.22	13.63

TEAM0959-003 08/01/2004

	Rates	Fringes
Truck Driver		
GROUP 1	$ 32.10	10.72
GROUP 1A	$ 33.15	10.72
GROUP 2	$ 31.05	10.72
GROUP 3	$ 30.37	10.72
GROUP 4	$ 29.90	10.72
GROUP 5	$ 29.26	10.72

GROUP 1: Semi with Double Box Mixer; Dump Trucks (including rockbuggy and trucks with pups) over 40 yards up to and including 60 yards; Deltas, Commanders, Rollogans and similar equipment when pulling sleds, trailers or similar equipment; Boat Coxswain; Lowboys including attached trailers and jeeps, up to and including 12 axles; Ready-mix over 12 yards up to and including 15 yards)

GROUP 1A: Dump Trucks (including Rockbuggy and Trucks with pups) over 60 yards up to and including 100 yards; Jeeps (driver under load)

GROUP 2: Turn-O-Wagon or DW-10 not self-loading; All Deltas, Commanders, Rollogans, and similar equipment; Mechanics; Tireman, heavy duty; Dump Trucks (including Rockbuggy and Trucks with pups) over 20 yards up to and including 40 yards; Lowboys including attached trailers and jeeps up to and including 8 axles; Super vac truck/cacasco truck/heat stress truck; Ready-mix over 7 yards up to and including 12 yards; Tireman, heavy duty; Turn-O-Wagon or DW-10, not self loading

GROUP 3: Dump Trucks (including Rockbuggy and Trucks with pups) over 10 yards up to and including 20 yards; batch trucks 8 yards and up; Oil distributor drivers; Water Wagon (when pulled by Euclid or similar type equipment); Partsman; Oil Distributor Drivers; Trucks/Jeeps (push or pull)

GROUP 4: Buggymobile; Semi or Truck and trailer; Dumpster; Tireman (light duty); Dump Trucks (including Rockbuggy and Truck with pups) up to and including 10 yards; Track Truck Equipment; Stringing Truck; Fuel Truck; Fuel Handler with truck; Grease Truck; Flat Beds, dual rear axle; Hyster Operators (handling bulk aggregate); Lumber Carrier; Water Wagon, semi; Water Wagon, dual axle; Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted "A" Frame manufactured rating over 5 tons; Bull Lifts and Fork Lifts with Power Boom and Swing attachments, over 5 tons; Front End Loader with Forks; Bus Operator over 30 passengers; All Terrain Vehicles; Boom Truck/Knuckle Truck over 5 tons; Foam Distributor Truck/dual axle; Hydro-seeders, dual axle; Vacuum Trucks, Truck Vacuum Sweepers; Vacuum Trucks, Truck Vacuum Sweepers; Loadmaster (air and water); Air Cushion or

similar type vehicle; Fire Truck; Combination Truck-fuel and grease; Compactor (when pulled by rubber tired equipment); Rigger (air/water/oilfield); Ready Mix, up to and including 7 yards

GROUP 5: Gravel Spreader Box Operator on Truck; Flat Beds, single rear axle; Boom Truck/Knuckle Truck up to and including 5 tons; Pickups (Pilot Cars and all light duty vehicles); Water Wagon, single axle; Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted "A" Frame, manufactured rating 5 tons and under; Bull Lifts and Fork Lifts (fork lifts with power broom and swing attachments up to and including 5 tons); Buffer Truck; Tack Truck; Bus Operators (up to 30 passengers); Farm type Rubber Tired Tractor (when material handling or pulling wagons on a construction project); Foam Distributor, single axle; Hydro-Seeders, single axle; Team Drivers (horses, mules and similar equipment); Fuel Handler (station/bulk attendant); Batch Truck, up to and including 7 yards; Gear/Supply Truck;

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.)

and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01015

SPECIAL ITEMS

SECTION 01015

SPECIAL ITEMS

PART 1 GENERAL

1.1 SCOPE

Items included in this section cover special features and/or requirements which are not otherwise specified or indicated.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E 1527	(1993) Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 262	Generators of Hazardous Waste
40 CFR 261	Identification and Listing of Hazardous Waste

NSF INTERNATIONAL (NSF)

NSF 61	(2002e) Drinking Water System Components - Health Effects

STATE OF ALASKA ADMINISTRATIVE CODE (AAC)

12 AAC 32	Electrical Administrators
12 AAC 39	Mechanical Administrators
18 AAC 60	(2003) Solid Waste Management
Title 08	(2003) Business and Professions

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for

	Construction
40 CFR 61	National Emission Standards for Hazardous Air Pollutants

U.S. ARMY CORPS OF ENGINEERS (USACE)

TI 809-04	(1998) Seismic Design for Buildings
EM 200-1-1	(1999) Validation of Analytical Chemistry Laboratories

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Utility Service Plan; G,

SD-03 Product Data

Materials list for temporary utility services

1.4 ACCIDENT PREVENTION PLAN

The Contractor shall obtain the Contracting Officer's approval of the Accident Prevention Plan required by the Safety and Health Requirements Manual referenced in paragraph Accident Prevention of the Contract Clauses prior to start of any work at the project site.

1.5 FIRE SAFETY

The Contractor shall obtain a permit from the organization having jurisdiction over the job site for any welding or open flame work.

1.6 COMPLIANCE WITH ALASKA STATE LABOR LAWS ON OCCUPATIONAL LICENSING-

The Contractor shall comply with the current provisions of Alaska Statutes Title 08 and Alaska Regulations 12 AAC 32 and 12 AAC 39 requiring licensed electrical and mechanical administrators to supervise and be responsible for the performance of all regulated categories of electrical and mechanical work performed on-site as part of this contract. The following is a partial list of areas covered by the Alaska State Regulations:

a. Controls and Control Wiring 12 AAC 32.275

b. Commercial Wiring 12 AAC 32.165

c. Line Work 12 AAC 32.075

The Contractor shall also be required to comply with State of Alaska requirements for occupational licensing of electrical and mechanical journeymen and apprentice craftsmen performing any work on-site as part of this contract. The ratio of individuals holding trainee certificates may not be more than two electrician trainees for every certified electrical journeyman, or residential wireman as applicable on a job site, or two power linemen trainees for every certified power lineman on the job site. The Contractor shall be prepared to demonstrate on demand, the licensing of the craftsmen engaged in the work.

1.7 EXCAVATION CLEARANCE REQUEST (ECR) - FORT WAINWRIGHT

a. Prior to the commencement of any excavation, trenching or other digging activity for all soil disturbing activities impacting soils six inches or more below the ground surface, the Contractor shall obtain an Excavation Clearance Request (ECR), USARAK Form 81-E. USARAK Form 81-E is commonly referred to as a "Dig Permit". The Contractor shall be responsible for providing all information required by the ECR to include obtaining all signatures from the organizations and individuals required on the ECR. A blank ECR form may be obtained from the Customer Service Desk at the Directorate of Public Works, Building 3015, Ft. Wainwright.

b. If contaminated soils, drums, unexploded ordnance, or unusual debris are found on or around any work site, the Contractor shall stop work immediately and notify the Fire Department or "911" in accordance with EM 200-1-1, Hazardous Materials and Regulated Waste Management. Additionally, the Contractor shall notify the Contracting Officers Representative (COR) immediately of any such action. Work at the site will be suspended until the area is cleared by DPW Environmental Resources and notification by the COR is given to the contractor allowing work to continue. Site clearance by Range Control is required if unexploded ordinance is involved.

c. Contaminated soil or groundwater removed from the work site must meet container type, sampling and analysis for potential contamination, marking and labeling, and moving and storage requirements specified in Pamphlet 200-1 or as otherwise specified by DPW Environmental Resources prior to removal. Soil and groundwater shall not be removed from any part of the installation without written authorization from an authorized USARAK representative. All operations involving hazardous waste will be accomplished in accordance with USARAK Regulation 200-4, Environmental Quality: Hazardous Waste, Used Oil and Hazardous Material Management and EM 200-1-1, Hazardous Material and Regulated Waste Management.

1.8 TEMPORARY AND PERMANENT ELECTRICAL SERVICE HOOK-UP

The Contractor shall adhere to the following requirements when connecting to the existing Ft. Wainwright electrical power distribution system. These requirements are for either temporary or permanent power, for Contractor or Government field office(s), or any other temporary facilities used during the course of this contract.

a. The Contractor shall obtain permission from Utilities Distribution foreman before starting any work on the electrical distribution system. Contact may be made by telephone at (907) 353-6130 or in person at building 3022.

b. The Contractor shall provide all plant, labor, materials and supervision necessary for power hook-ups except for the final hook-up to the distribution system. Final hook-up will be accomplished by Post personnel (DPW Line-crews) who will close in the cutouts after inspecting all work.

c. All work shall be accomplished in a workman like manner and in accordance with all applicable codes (NEC and NESC).

d. All jobsite trailer(s)/building(s) shall be located a minimum of 20 feet from High Voltage power lines.

e. The Contractor shall coordinate the final hook-up to the electrical distribution system with the Utilities Distribution foreman through the DPW Project Manager and Contracting Officer.

1.9 UTILITY OUTAGES - FORT WAINWRIGHT

The Contractor shall submit, in writing, a request for a utility outage to the Distribution Foreman (by FAX @ 907-353-6159 or hand delivered to Building 3022) with as much lead time as possible, but not less than five (5) working days prior to the requested utility outage date. The Contractor shall be responsible for verification of facsimile transmission to the Distribution Foreman by calling 907-353-7139. Contracting Officer shall be notified 5 days in advance of outages to occupied buildings to allow coordination with occupants.

All outages are to be scheduled to occur between 0800 and 1500 hours Tuesdays through Thursdays, but in no case shall the duration of the outage exceed four (4) hours. If outages exceed 4 hours Contractor shall provide temporary utilities to all facilities affected by lateral work.

The Contractor shall identify utilities affected (water, sewer, steam, condensate, electricity), the facilities affected, the exact locations, the duration of the outage, and a brief explanation of the work to be performed.

The Contractor may request utility outages outside of the normal accepted time frames and durations listed above; however, the acceptance of the request will be at the discretion of the Director of Public Works.

At the discretion of the Director of Public Works, and when deemed necessary for safety, efficiency, and mission impact, the Director of Public Works may direct the outage to occur during a specific day, or time of day, to minimize the impact to the affected buildings. Attached to this section, see utility matrix for utility requirements to each affected building.

The Contractor shall comply with Ft Wainwright "High Voltage Power line

Lock Out-Tag Out" standard operating procedures. See attachment

AM#1..."High voltage line work with energized lines (hot line work) is acceptable with proper qualifications from contractor and with clearance from Fort Wainwright Electric Utility Department".**...AM#1**

1.9.1 Telephone and Cable Outages

For commercial telephone and cable outages, the Contractor shall make those requests directly to the provider. No excavation shall be allowed until the provider has located and marked the utility line.

1.9.2 Special Sewer Line/Lift Station By-pass Requirements

1.9.2.1 General

Many of the facilities above cannot have interrupted service or cannot have interrupted service for extended periods of time. Because of these requirements the Contractor shall provide temporary service to these facilities 24-hrs/day, 7-days/week.

1.9.2.2 Installation of Materials and Equipment

The materials and equipment used for the construction of the temporary sewer by-pass line(s) shall be appropriate for the task intended and sized to meet the existing flow demands.

Installation of materials and equipment shall be performed in workman like manner. All piping joints and mechanical connections shall be free from defects and leaks. All equipment employed shall be in good working order. The Contractor shall routinely inspect the equipment and lines to ensure that the equipment is operating as intended and that there are no leaks in the system. Any equipment not operating properly or line connections leaking shall be repaired or replaced immediately.

1.9.2.3 Special Lift Station Requirements

Demolition/construction operations will require the Contractor to provide some sort of sewage by-pass system and/or temporary lift station for the existing lift station at Building 3403.

If a temporary lift station is used, then that station shall be sized to handle the anticipated flows equal to the design flows of the lift station that it is supporting. The existing lift station has two 800 gpm, 23 foot head pumps. Contractor may monitor existing sewage flows to determine size of temporary lift station. It shall be the Contractors' responsibility to ensure that the temporary lift station will function at the same level as the existing lift station to be replaced.

The method used shall be annotated in the temporary utility plan and shall be coordinated and approved by the Contracting Officer.

1.9.3 Notification and Posting of Outage Notices

Notification and posting of scheduled outage notices will be conducted as follows:

For Contractor initiated outage requests, the Contractor is responsible for posting outage notices on all affected buildings a minimum of 24 hours before the outage. The Contractor is responsible for posting notices at all building entrances and for notifying the designated building manager either in person or telephonically. The DPW customer service office will provide the DPW Project Manager and the Contractor a listing of the names and phone numbers of the building managers for the affected buildings.

If the work cannot be completed within the outage time requested, and another outage is necessary, a new request shall be submitted and approval obtained in advance for the additional time required.

When the work cannot be completed within the outage time requested and the DPW shop personnel are required to stay beyond their normal duty day, the Contractor will be held responsible for all overtime costs associated with the outage.

Valve operations on active utilities will be performed by post personnel.

1.9.4 Emergency Outages

For emergencies when advance notification of a utility outage cannot be made, the following procedures apply:

The Contractor will notify the Utilities Distribution Foreman who will then notify the DPW Customer Service Office and the on-duty Fire Department Assistant Chief of the general information and circumstances relating to the outage. The information to be provided includes the utility affected (i.e. water, steam, or power), the general area of the affected outage and/or the specific buildings affected. The Utilities Foreman will provide periodic updates to the Customer Service Office during extended outages.

1.10 DISPOSITION OF MATERIALS

Combustible and noncombustible waste material shall be disposed of in the Ft. Wainwright Landfill. No burning of materials will be permitted. The landfill will be open by appointment only during the following hours (excluding Federal holidays): Monday - Thursday 0800 to 1600 hours and Friday 0800 to 1500 hours subject to the conditions listed below: A landfill Authorization Card will be required for each Contractor. The Contractor shall obtain the Authorization Cards from the Ft. Wainwright Environmental Office, Building 3023; phone 353-6249. Load sheets will be required for each load at the landfill gate per current practice. Questions concerning disposal of solid waste at the Ft Wainwright Landfill can be addressed to the Ft Wainwright Environmental Office at 353-6249.

Construction Debris:

a. Access must be coordinated at least one day in advance with DPW

Grounds Maintenance Shop at 353-7192.

b. Contents of the load must be construction materials only with no mixed garbage such as food containers or other household type refuse. Mixed loads will be refused.

Asbestos:

a. Loads must be properly documented.

b. Access must be coordinated at least one day in advance with DPW Grounds Maintenance Shop at 353-7192.

c. Delivery time must be coordinated at least four hours before the landfill closes for the day to allow the operator enough time to cover the material before the landfill closes.

d. Disposal of asbestos waste is allowed in accordance with the following requirements; submit to the landfill operator a completed asbestos manifest form with each load of Asbestos Containing Material (ACM). ACM shall be segregated from non-asbestos containing building debris (the Ft. Wainwright landfill will not accept whole-building waste streams for disposal in the asbestos cell), properly contained in leak-tight containers and labeled. Labeling shall include description of contents, ACM source location (building number or utilidor location), and the Contractor's name and contract number for identification purposes.

Containers may be barrels, drums, or six-mil or thicker plastic bags. The ACM waste shall be placed in approved locations only as directed by the landfill operator. All containers shall have warning labels attached that state:

CAUTION CONTAINS ASBESTOS AVOID OPENING OR BREAKING CONTAINER BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

OR

CAUTION CONTAINS ASBESTOS AVOID OPENING OR BREAKING CONTAINER BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM

Prohibitions and Special Restrictions:

a. Scavenging and Salvaging is prohibited.

b. Disposal of hazardous wastes, as defined by 40 CFR 261 is prohibited. Ensure waste meeting this definition is disposed of in accordance with 40 CFR 262, Standards Applicable to Generators of Hazardous Waste.

c. Disposal of raw sewage, liquids, radioactive material, explosives, oil, solvents, strong acids, untreated sewage sludge, septage, untreated pathogenic, and other waste defined under 18 AAC 60.910(28) is prohibited at this facility.

d. Disposal of lead-acid vehicle batteries is prohibited.

e. Disposal of polluted soil as defined by 18 AAC 60.025 & 330 is prohibited.

f. Disposal of trash other than construction debris is prohibited.

g. Drums must be empty and cleaned of fluids prior to crushing. All drums must be crushed and flattened prior to disposal.

h. Ensure that if scrap vehicles are accepted at the landfill, they are drained of all oil and petroleum products and lead-acid batteries are removed prior to disposal.

i. Any trees, shrubs or other vegetation that is to be disposed of in the Ft. Wainwright landfill shall be chipped prior to disposal. This requirement applies to all shrubs, vegetation and trees with a base diameter of 3 inches or less. All trees with a base diameter of greater than 3 inches shall be salvaged for public use. All waste materials from the salvage operations shall be chipped and disposed of in the landfill.

1.10.1 Landfill Cover Requirements

All construction and asbestos containing material (ACM) debris placed in the landfill by the Contractor's operations shall be covered daily. The Contractor shall provide all plant, labor, material, equipment and supervision necessary to cover all construction and ACM debris deposited in the landfill generated by this project's construction operations. The Contractor shall be responsible for providing cover in accordance with the requirements listed below and in accordance with all local, State, and Federal regulations. This work is considered incidental to the project requirements and no separate payment will be made for this work.

1.10.1.1 Cover Layer Requirements

a. The material used to cover the construction debris and ACM cells shall be obtained from an approved source(s). See additional requirements listed in paragraph Cover Material Source below.

b. Material shall be spread in sufficient quantity and loose thickness to ensure that when compactive effort is applied that the cover material will consolidate easily and uniformly, and that all debris is covered. Loose cover material shall be spread in such a manner in a thickness so as to preclude damage to bagged ACM. Exposed debris or bagged ACM will not be allowed.

c. The maximum compacted thickness shall be 12 inches minimum and 24 inches maximum.

d. Compactive effort shall be applied uniformly across the entire surface employing equipment of a type specifically designed for use in this type of environment. Required compactive effort shall be

equivalent to 3-passes of a D-6 dozer or heavier piece of equipment over the entire surface to be covered.

1.10.1.2 Cover Material Source

There are no borrow sources available at Ft. Wainwright, suitable cover material shall be provided from a source outside of Ft. Wainwright.

The Contracting Officer shall approve that source. This material shall meet the requirements outlined in the paragraph entitled NON-GOVERNMENT BORROW SOURCES.

The Contractor shall provide all plant, labor, equipment and supervision necessary for the acquisition, transport and off-loading of the cover material at the landfill.

1.10.1.3 On-site Equipment Storage

Storage of equipment associated with this effort may be stored within the boundary of the landfill. It is the Contractor's responsibility to safeguard against unauthorized access and operation of equipment during non-duty hours.

1.11 TESTS

The Contractor shall provide testing by an independent COE approved testing laboratory, except where specifically noted to be performed by the Government, in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL.

1.12 WARRANTY OF CONSTRUCTION

a. In addition to any other warranties in this contract, the Contractor warrants, except as provided in subparagraph "i" herein, that the work performed under this contract conforms to the contract requirements and is free of any defect of equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or -controlled real or personal property, when that damage is the result of:

1. The Contractor's failure to conform to contract requirements; or

2. Any defect of equipment, material, workmanship, or design furnished.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

e. The Contracting Officer will notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, expressed or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

1. Obtain all warranties that would be given in normal commercial practice;

2. Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

3. Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

h. In the event the Contractor's warranty under subparagraph "b" herein has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

i. Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage which results from any defect in Government-furnished material or design.

j. This warranty shall not limit the Government's rights under the Inspection of Construction clause of this contract with respect to latent defects, gross mistakes, or fraud.

k. Defects in design or manufacture of equipment, specified by the Government on a "brand name and model" basis, shall not be included in this warranty. In this event, the Contractor shall require any subcontractors, manufacturers, or suppliers thereof to execute their warranties, in writing, directly to the Government.

1.12.1 Failures

Upon receipt of notice from the Government of failure of any part of warranted items during the warranty period, the affected part or parts shall be promptly replaced. Such replacement shall include furnishing and

installing the necessary new part or parts, making all necessary repairs, restoring the affected item to the operating condition specified in this contract and making all such tests as are necessary to ensure that there are no remaining defects. Such tests shall be performed in the presence of representatives of the Using Agency indicated below. Upon final acceptance of the work or transfer of responsibility to the Government for operation and maintenance of the items covered, whichever is earlier, the Contractor shall be responsible to the Using Agency for the warranty provisions of this contract. A letter stating the applicable warranty provisions shall be furnished to the Contracting Officer in duplicate, in the format and text shown in the sample letter attached to this section.

Attn: APVR-WPW-EN Directorate of Public Works
3015 Montgomery Road, #6500
Fort Wainwright, Alaska 99703-6500

1.12.2 Warranty Tag

See specification section 01780, paragraph 1.3.5, Close-out Submittals for Warranty Tag Information.

1.13 CAMP FACILITIES

There are no Government owned camp facilities at the jobsite for the Contractor's use.

1.14 PARTNERING

The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance, intended to achieve completion within budget, on schedule, and in accordance with plans and specifications.

This partnership will be bilateral in makeup, and participation will be totally voluntary. Implementation of this initiative will be a topic of discussion at the Preconstruction Conference. Other recurring or special purpose meetings, as agreed between the Government and the Contractor, will be held as necessary to resolve contentious issues and maintain the partnering spirit.

1.15 OPERATION AND MAINTENANCE (O & M) MANUALS

One hard copy and one electronic CD ROM (matching hard copy) shall be submitted to the Contracting Officer not later than 30 days prior to scheduled contract completion. Failure to submit manuals by this date will be considered cause to withhold any payments due the Contractor. All equipment manual materials shall be durable, clearly printed or reproduced copies, not more than 8-1/2 x 11 inches in size, or neatly folded to that size without overlapping into the binding. Materials shall be indexed and bound in stiff covers with tab separators. Approval of manuals shall be obtained prior to scheduling operating tests and field training courses.

1.16 HEALTH HAZARD ASBESTOS

Minor amounts of asbestos may be present within building materials encountered while working with existing insulation, piping and equipment. The Contractor shall determine the presence of asbestos and, if present, notify the Contracting Officer immediately and provide safeguards and disposal methods, including work practices, respiratory protection and industrial hygiene measures, that satisfy 29 CFR 1910 and 29 CFR 1926.58. An equitable adjustment will be made to the contract for additional work required if asbestos is present. Removal and disposal shall also satisfy 40 CFR 61.140 through 61.156, with disposal satisfying 61.146(c)(1).

1.17 EARTHQUAKE-RESISTANT EQUIPMENT SUPPORTS

All items of electrical, mechanical, and other installed equipment shall be mounted to prevent damage from lateral motion caused by earthquake. Restraints for seismic loading shall comply with requirements in TI 809-04. Items of suspended or supported equipment subject to causing damage by swaying or tipping shall be cross-braced or laterally secured to the building structure. Any items of equipment mounted without rigid restraint of lateral motion shall have sufficient clearances and flexibility of associated wiring, piping, or other connections to accommodate the full range of such motion as might occur.

1.18 NPDES

Work shall comply with EPA National Pollutant Discharge Elimination System (NPDES General Permit No. AK-R-10-0000 for Construction Activities). See SECTION 01356 STORMWATER POLLUTION PREVENTION MEASURES for additional specific requirements.

1.19 NON-GOVERNMENT BORROW SOURCES

The Contractor shall check any non-Government, proposed borrow sources for the presence of hazardous substances and petroleum products as defined in ASTM E 1527. The publication includes guidance on previously examined sites. A Phase I Environmental Site Assessment, also as defined therein, shall be submitted for each proposed borrow site as a supplement to the Environmental Pollution Control Plan specified in SECTION 01355 ENVIRONMENT PROTECTION. The report shall identify any previous or current presence of hazardous substances at the site, regardless of whether they have been, or can be, released to the environment. The Assessment shall be performed under the direct supervision of an independent, registered professional engineer, currently licensed by the State in which the borrow source is located, and within such time frame as will ensure reports are valid when submitted. The engineer shall have a minimum of 3 years experience in performing satisfactory Environmental Site Assessments. All reports shall be certified in writing by the engineer and submitted in the standard format specified in the referenced publication, through the Contracting Officer, to the Post Environmental Office for review. Reports shall be submitted at least 30 days prior to needing borrow materials in the work. The qualifications of the engineer performing the Assessment shall be included with the report. Where hazardous materials are indicated, use of the source will not be allowed. No borrow materials shall be brought onto

Government property without approval of the Contracting Officer. The Government reserves the right to sample and test any borrow materials delivered to the project for conformance with this specification.

1.20 BIRDS' PROTECTION

Federal and State law protects all nesting birds that build mud nests on Post facilities. On Ft Wainwright this includes cliff swallows that build mud nests on actual facilities, the new gulls that sometimes build nests on vehicles or other assets and raptors that build nests on powerpoles. Once the birds establishes nest and lays birds eggs, then the nest cannot be removed or annoyed until the nests are no longer occupied. Forcing or annoying the birds to abandon an occupied nest is a violation of State and Federal law. Any work including demolition of known Cliff Swallows nesting areas (i.e., eaves, porches, entranceways, tanks, etc.) shall be done prior to 10 May or after 1 August to avoid project delays.

The Contractor shall initiate a program to remove the partially completed nests daily from 10 May to 21 July to avoid work stoppage. The Contractor is responsible for all or any delays and charges filed by U.S. Fish and Wildlife Service and the State of Alaska Department of Public Safety due to his/her negligence in removing and/or annoying such established nests.

1.21 REQUIRED UTILITY SERVICES

The Contractor will be required to provide full temporary utilities and services for each facility affected by any outages during the execution of this contract, using materials that meet NSF 61 requirements.

1.21.1 Utility Service Plan

The Contractor shall provide a detailed plan, for Government approval, indicating the Contractor plans to maintain utility services to all facilities during the performance of this contract. Contractor shall submit the Utility Service Plan in tabular form and shall include a corresponding site plan for each facility affected. Due to the large number and diversity of facilities affected, the Contractor shall allow 30 calendar days for review, coordination and approval of the plan. If revisions are necessary, the Contractor shall adjust the plan as necessary and resubmit the revised plan for approval. The Contractor shall provide a revised plan within 7 calendar days and allow an additional 15 calendar days for review, coordination, and approval of the revised plan. No construction operations may begin until approval of the Utility Service Plan has been obtained. If project construction will be performed in stages, the Contractor is responsible to obtain Interim Approval from ADEC to operate completed water line sections.

1.21.2 Utility Line Isolation In Utilidor

The Contractor shall isolate all water, sewer, and steam and condensate lines with flanged connections, gaskets, and bolted-on blind flanges. All lines 2 inches NPS and larger shall employ welded slip-on flanges, and all lines smaller than 2 inches NPS may be welded slip-on or screwed-on flanges at the Contractor's option. All work and materials accomplished/provided

shall meet the requirements as outlined below:

a. SECTION 05093 WELDING PRESSURE PIPING

b. SECTION 02559 HEAT DISTRIBUTION SYSTEMS IN UTILIDORS AND MANHOLES

The Contractor shall coordinate temporary utility outages with the Post Utility Foreman. A minimum of 5 days advanced notice will be required for the outage. Once the outage is in effect, the Contractor shall expedite the isolation operations so as to minimize the utility disruption. Post personnel will perform actual valve operations.

1.21.3 Temporary Water Lines

All temporary potable water lines shall be disinfected in accordance with SECTION 02511 WATER DISTRIBUTION SYSTEMS IN UTILIDORS. Temporary water lines must comply with NSF 61 material requirements. The Contractor shall provide temporary water lines to buildings affected by water service disruptions/outages.

1.22 TEMPORARY UTILITY REQUIREMENTS

It is the Contractor's responsibility to carefully review the requirements of this paragraph, field verify the information provided for accuracy, and seek clarification/guidance/direction from the Contracting Officer for any questions. If Contractor believes any outage information or details were overlooked, the discrepancy(s) should be brought to the Contracting Officer's attention and resolved.

Contractor shall provide temporary utility connections to building of equal/adequate capacity to maintain fire protection service to the buildings affected.

The Contractor shall obtain approval from ADEC for temporary utilities before they are put into service for this project. Submit application to ADEC 30 to 60 days prior to the start up of temporary utilities. The submittal checklists are available from ADEC at:

State of Alaska
Department of Environmental Conservation
Northern Regional Office
610 University Ave.
Fairbanks, AK 99707-3643

1.22.1 Utilidor/Building Heating Prohibitions

Temporary heat for the utilidor or buildings shall not be accomplished with electricity. Buildings shall be heated using the same medium as is currently in use. The utilidor shall be heated using form of unit heaters, steam or oil fired forced air heat (i.e. salamander) or some other alternate method of the Contractor's devising. Whichever heating medium the Contractor elects to employ, that method shall be coordinated through the Contracting Officer.

1.22.2 Materials List for Temporary Utility Services

The Contractor shall submit a list of all materials used in providing temporary utilities for this project. This list shall be provided in tabular form and include the following:

a. Building number

b. Material type(s) and size(s)

c. Intended usage

1.22.2.1 Environmental Protection for Temporary Sewer System

The Contractor shall submit, as part of his TEMPORARY UTILITY PLAN, an environmental protection segment that specifically addresses how the Contractor will deal with unintended discharge of raw sewage onto the ground or in the utilidor. The plan shall include the following:

a. Primary POC (name and phone #).

b. Alternate POC (name and phone #).

c. Monitoring/maintenance person (this person shall be capable of operating/maintaining/repairing the equipment and components).

d. Containment plan complete with a list of equipment/materials to be employed to contain the discharge.

e. Cleanup plan.

f. Personnel health and safety plan.

g. Notification plan in the event of an unintended discharge of raw sewage.

1.22.3 Steam

The only time a building can be without steam is 1 June through 1 September. This exemption for steam service does not apply if full utilities are required at all times for a particular building (see below).

1.22.4 Electrical

1.22.4.1 Electrical Power Outages 4-hour Maximum Duration

If for some reason electrical power will be affected, the following buildings cannot have an outage lasting more than 4 hours:

a. 3008

b. 3011

c. 3033

d. 3031

1.22.5 Special Temporary Facilities

1.22.5.1 Mission Critical Facilities

Full temporary utilities will be required at all times for this facility. No outages of any kind are permitted. See attached schedule for required Utility Services During Construction.

1.23 UTILITY CERTIFICATES

The Government is in the process of obtaining the approval to construct, construction and operation certificates for water and sewer and it shall be as soon as it is available.

1.24 COORDINATION OF WORK

Traffic control plan shall be submitted 60 days in advance of construction commencement. Any changes or modifications to the traffic control plan will require an additional 30-day Government review period. Detour and construction signage must be posted 7 days in advance of any closure or detour. Detours, temporary roads and closures must be coordinated through the Contracting Officer. Notification to newspapers & TV must be coordinated 30-days in advance of construction.

Santiago Avenue may be closed once for a maximum of 2 weeks between 15 July 2005 and July 1 2006. Only one two-week closure is allowed.

The Contractor shall provide pedestrian access including pedestrian bridges with handrails to the following buildings: 3401, 3701 and 3702.

Provide access for local traffic on all roads.

2-way detour traffic (off existing paved roads) access with 13 foot wide lanes must be maintained.

The waterline to well house (Bldg 3405) shall not be out of service for longer than two weeks.

Excess excavation materials/soil can be stock piled in the parking lot west of Building 3405.

1.25 SCHEDULING OF WORK

The Contractor shall limit his work between 0600 hours and 2200 hours everyday while working within the Barracks vicinities (Building Number 3206). Construction noise shall be kept to minimum and without disturbing the Barracks' residents daily activities.

AM#1... The Contractor shall remove and disconnect all temporary utilities by 1 October 2005. Temporary utilities are not allowed during the winter. All temporary utilities shall be permanently installed for the winter. The

Contractor shall start up utility work in the spring of 2006. Please contact Deptartment Of Public Works at (907) 353-7766 for a specific date. All utility construction work must be completed by 1 October 2006 with the exception of grass seeding which shall be completed in the spring of 2007....**AM#1**

1.26 ATTACHMENTS

Schedule for Required Utility Services During Construction

Institutional Controls

High Voltage Power Line Lockout-Tag Out SOP

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

S A M P L E L E T T E R

Contracting Officer
Date_____
Address (as stated in Notice of Award)

SUBJECT: Warranty Provisions, Contract

GENTLEMEN:

This is to acknowledge our responsibility in connection with the warranty provisions of this contract as set forth in the contract specifications.

The following items, equipment or systems furnished or installed under this contract are hereby warranted against defective design, material and workmanship for a period as indicated:

Warranted Item, Equipment or System	Identification Serial Number, Etc.	Warranty Expires at 11:59 PM Std. Time
_____	_____	_____
_____	_____	_____
_____	_____	_____

Upon receipt of notice from the Government of failure of any part or parts of the warranted item, equipment, or system during the warranty period, the affected part or parts will be replaced promptly with new parts. Such replacement will include furnishing and installing the new part or parts, making all necessary repairs, restoring the item, equipment, or system to the operating condition specified in this contract and making all such tests as are necessary to ensure that there are no remaining defects. Such tests will be performed in the presence of the Representative of the Using Agency indicated below.

We are responsible to _____ for the warranty provisions of this contract. Correspondence regarding the failure of any of the preceding items, equipment or systems covered by the warranty provisions of this contract should be addressed to:

	Telephone Number:
_____	
_____	_____
_____	_____

Very truly yours,

Signed: _____
Title: _____
Organization: _____

CHEDULE: REQUIRED UTILITY SERVICE DURING CONSTRUCTION -- FTW28

version 26 Oct 04

Information affecting road closures, utility outages, buildings affected by utility outages, etc. Utilties affecting the buildings along the utilidor route. For specification section 01015.

Sewage Lift Station (B3403) services all sewage in its vicinity, and everything to the east, south, and southwest.

CONSTRUCTION STARTS: (EST) 1 MAY 05.

MISC INFO: Award = 18 Mar 05, NTP = 4 Apr 05, and BOD = 11 Oct 05.

sort	BLDG. NO.	OCCUPANT	NO. OF OCC.	BLDG. TYPE	SERVICE REQUIRED						NOTES	POC INFO
					STM	COND	WTR	SWR	ELEC	ALARM		
	3401	Barracks & Admin		brks / admin	X	X	X	X	X	X	"mission critical" facility	
	3402	Lodging Facility		Hotel & Admin	X	X	X	X	X	X	"mission critical" facility	
	3403	Sewage Lift Station	0	Lift Station	A	A	X	X	X	X	"mission critical" facility	
	3405	Water pumphouse	0	pumphouse	A	A	X	0	X	X	"mission critical" facility	
	3406	Kamish Clinic		medical clinic	X	X	X	X	X	X	"mission critical" facility	
	3210 A&B	Company Operations Facility		office	B	B	**B**	**B**	X	X	"mission critical" facility	
	3211	Battalion Operations Facility		office	B	B	**B**	**B**	X	X	"mission critical" facility	
	3700	Credit Union / Library		bank / library	A	A	X	X	X	X	"mission critical" facility	
	3701	Furniture Store		store	A	A	X	X	X	X	"mission critical" facility	
	3702	Bowling Alley		bowling alley	X	X	X	X	X	X	"mission critical" facility	
	3205	Arctic Oasis Club		bar & grill	X	X	X	X	X	X	"mission critical" facility	
	3206	Barracks	144	barracks	X	X	X	X	X	X	"mission critical" facility	
		OTHER for designers**										
	N/A	Utilidor Site H5-4-4H	0	fire hydrant			1				This fire hydrant is on the border of FTW288 and FTW269. If missed by FTW269, put it under FTW288.	

NOTES

X — Requires full temporary utility for this service.

A — Full temporary steam and condensate required, EXCEPT from **15 MAY** to **1 SEP.**

B - **If work performed 2005:** None required from 15 May 05 to 1 Sep 05.

If work performed 2006: Requires full temporary utilities for this service.

0 none required

SCHEDULE: REQUIRED UTILITY SERVICE DURING CONSTRUCTION

BLDG. NO.	OCCUPANT	NO. OF OCC.	BLDG. TYPE	SERVICE REQUIRED					NOTES	POCs
				STM	WTR	SWR	ELEC	ALARM		
3003	DPW's raw water point	0	CMU well-house	4	2	2	1	N/A	Wellhouse, used only in summer. Has connection to utilidor piping. Must temporarily flange off conection to utilidor piping so well-house can be used by KTRs for dust control.	POC: Dave Kramer, FWA Water Plant, 3-7108
3010	4-123rd Av. Btn.	70 - 170	Battalion HQ	1	1	1	1	1	"mission critical" facility. Has 2 classrooms.	Sgt Johnson (S4), 3-7767
3005	A Co. & HHC 4th Btn, 123rd Av.	50	Hangar 3	4	1	1	1	1		Chief Mark Howdeschell, 3-7417 or SFC Lein 3-7460
3006	HHC Storage	0	Butler style bldg	4	2	2	5	5		Chief Mark Howdeschell, 3-7417 or SFC Lein 3-7460
2999	Haz. Stor. Shed	0	Canopy w/ fence	N/A	N/A	N/A	N/A	N/A	No utilities. Located between Hgrs 2 & 3	
3008	A Co. 4th Btn, 123rd Av.	60	Hangar 2	4	1	1	1	1		CPT. Groh (she) 3-6856
3011	Facilities Engr. Fire Prot. Water Res. #1	0	Water reservoir	4	1	1	1	1	This bldg serves fire water to Hangars 2 & 3.	POC: Dave Kramer, FWA Water Plant, 3-7108

Notes:

1 Requires full temporary utilities.
2 Outages may occur between 15 May and 1 September
3 Requires a minimum of (2) prota-potties, (2) hand-wash stations, (2) bottled water stations.
4 No steam outages may occur before 15 May or after 1 September
5 Where outages are anticipated to last more than 2-weeks the Contractor shall provide full temporary utilities.

SCHEDULE: REQUIRED UTILITY SERVICE DURING CONSTRUCTION

BLDG. NO.	OCCUPANT	NO. OF OCC.	BLDG. TYPE	SERVICE REQUIRED					NOTES	POCs
				STM	WTR	SWR	ELEC	ALARM		
3009 (west)	"Miles Warehouse"	0	Butler style whse	4	2	2	5	2		
3009 (east)	Training Support Cntr. Stor. (DPTSM)	0	Butler style whse	4	2	2	5	2		POC: Mike Czopek, 356-3570
2109	Military Working Dog Kennel	10	1 story	5	1	1	1	1	Mission critical facility.	
3028	Provost Marshall Office	25	1 story	1	1	1	1	1	Mission critical facility.	
3031	507th SIG	0	Butler style whse	4	N/A	N/A	1	1		
3033	507th SIG	0	Butler style whse	4	N/A	N/A	1	1		

Notes:

1 Requires full temporary utilities.
2 Outages may occur between 15 May and 1 September
3 Requires a minimum of (2) prota-potties, (2) hand-wash stations, (2) bottled water stations.
4 No steam outages may occur before 15 May or after 1 September
5 Where outages are anticipated to last more than 2-weeks the Contractor shall provide full temporary utilities.

APVR-RPW (200-1)

U.S. Army Alaska Institutional Controls
Standard Operating Procedures

1. References:

a. AR 200-1, Environmental Protection and Enhancement
b. AR 200-2, Army Institutional Control Program Enforcement
c. Interim Army Management Plan for Land Use Controls Associated with Environmental Restoration Activities; Memorandum, Dept. of the Army, USAEC, 17 Aug 01
d. USARAK 200-4, Environmental Quality; Hazardous Waste, Used Oil and Hazardous Materials Management
e. AR 210-20, Army Installation Master Planning
f. 40 CFR 300, National Oil and Hazardous Substances Pollution Contingency Plan.
g. 42 USC 1901 et seq. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as Amended by the Superfund Amendment and Reauthorization Act of 1986.
h. Federal Facility Agreements for Forts Richardson and Wainwright
i. Defense-State Memorandum of Agreement
j. Operable Unit Records of Decision and/or other decision documents as appropriate.

2. Purpose. These Standard Operating Procedures establish the responsibilities, policies and procedures for complying with Department of Defense (DOD), Department of the Army (DA), and US Army, Alaska (USARAK) regulations as well as Federal and State Laws for instituting, maintaining, and enforcing Institutional Controls (IC) on Federal Facilities.

These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (EPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendment Reauthorization Act. The details of these agreements may be found in the Decision Documents (DD) and Records of Decision (RODs) which are maintained in the Public Works, Environmental Offices. These agreements have been executed in accordance with the authority cited in Section 1.

These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.

Institutional Controls are legal or administrative actions designed to minimize the risk of human exposure to a hazardous substance. The establishment of IC's substantially reduces the costs of cleanup while maintaining essential health and safety requirements. Violation of IC's may significantly increase the costs of site maintenance and cleanup. Institutional Controls, including limitations and restrictions to human access, water use, and property transfer restrictions will supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances. Typical controls are:

- Installation and maintenance of signs or fences to restrict access to an area;

- Patrols and enforcement of access restrictions by Military Police;

- Widespread availability of and easy access to an intranet mapping interface application which is capable of accessing Geographic Information System (GIS) data layers which contain information pertaining to contaminated sites. Such information must include the location of contaminated areas, location of water wells, water chemistry, depth to groundwater, etc.;

- Identification of contaminated areas and associated levels of contamination on real property records and land planning maps for notification of future users;

- Provide all contract agencies with construction, excavation and well installation restrictions.

These controls have been established to prohibit or limit access to, or use of, the land, surface water, and ground water and are applicable to all known or suspected contaminated sites. The following are examples of the restrictions agreed upon in the RODs:

- Prohibitions or limitations on the construction or renovation of new or existing facilities to include residential area new construction, road repair and realignment, utility work, digging, trenching, excavation, paving, or drilling of soil borings and wells.

- Recreational use of natural resources i.e., camping, fishing, hunting etc., and training activities i.e., bivouac, combat maneuvers, land navigation, construction of fighting positions, etc., can be prohibited or limited depending on the type of contaminant present.

- Groundwater restrictions prohibit the drilling of water wells for potable water, fire suppression, irrigation or other purposes.

These restrictions remain in place until EPA, ADEC. and the Army mutually decide the contamination has been reduced, through cleanup activities or natural attenuation, to levels protective of human health and the environment. In making their decision, EPA, ADEC, and the Army will consider levels specified in the ROD or other decision document. If no decision document exists, EPA, ADEC, and the Army will consider the application of maximum contaminant levels (MCLs) for potable groundwater or risk-based concentrations for soil, sediment, surface water and other uses of groundwater.

3. Scope: These Standard Operating Procedures apply to all USARAK units and activities. Military and Civilian Support Activities, Tenant Organizations and agencies, and Government and Civilian Contractors that occupy, use, build, repair or maintain facilities on USARAK controlled lands.

4. Responsibilities:

a. The **Installation Commander** or his designee shall approve all Decision Documents and Records of Decision regarding remedial actions and Institutional Controls on USARAK controlled lands in accordance with DA guidance. Installation Commander shall also require compliance with these Decision Documents and Records of Decision.

b. **Directorate of Public Works** shall execute all aspects of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with the Defense Environmental Restoration Program and as agreed upon in the Federal Facility Agreements and the Defense-State Memorandum of Agreement. Public Works shall also:

(1) Establish, maintain, and routinely update complete records of all known or suspected sites, restoration actions and Institutional Controls;

(2) Document all actions and Institutional Controls in the Installation Action Plan, environmental GIS data base (REMOTE), and Master Plan. Distribute to affected units, organizations, and tenants, at the point they are affected on annual basis.

(3) Ensure that all affected tenants and contractor organizations are informed of:

(a) Known soil and ground water contamination in their areas of operation;

(b) Institutional Controls associated with remedial activities;

(c) Potential human health risks and environmental impacts associated with violating the controls;

(d) Potential fines, penalties, and criminal implications resulting from violations of the Institutional Controls.

(4) Provide oversight and review of all Excavation Clearance Requests (ECR's) to ensure that all activities that involve disturbance of soil or use of groundwater comply with current environmental laws.

(5) Conduct on-site inspections of all projects for which Institutional Controls are indicated or specified on an approved ECR. The inspections will determine compliance with Institutional Controls and with monitoring, reporting, notification, and stop work requirements specified in the ECR or its attachments.

(6) Ensure all affected, contracting mechanisms (i.e., job order contract, military construction, in-house projects, etc.) are modified to include the appropriate environmental information to prevent violation of Institutional Controls policies and prevent potential fines, penalties, and criminal implications resulting from violations of the Institutional Controls.

USARAK Form 81-E (Excavation Clearance Request) must be appropriately annotated by DPW-Environment Resources to prevent the undertaking of work inconsistent with established Institutional Controls at a particular site. If a dispute with a subordinate activity or tenant arises due to DPW-Environment Resources' non-concurrence on Form 81-E with proposed site work because of the potential for an Institutional Controls violation, the Commander's Policy Memorandum on Institutional Controls shall provide the basis for final resolution.

On-site inspections conducted by DPW Environment Resources during the course of work will confirm whether the work is conducted in compliance with the conditions specified in the ECR and its supporting documentation. If the work is inconsistent with requirements, DPW has the authority to issue a stop-work order. USARAK will not be responsible for costs incurred as a result of a stop-work order issued as a result of a violation of an Institution Control policy.

c. **Directorate of Contracting** shall determine the necessary protocols and language to be incorporated into applicable contract mechanisms to inform potential contractors of the environmental status of USARAK Installations regarding contamination. Such language or protocols will emphasize;

(1) The need for contractors to obtain an ECR prior to conducting any soil disturbing activities anywhere on USARAK controlled lands;

(2) Required attendance at an Explosive Ordnance Disposal (EOD) briefing on unexploded ordnance (UXO);

(3) Potential fines, penalties, and criminal implications resulting from violations of the Institutional Controls;

(4) Contractor familiarity with and adherence to the requirements of USARAK 200-1 Pamphlet, Hazardous Materials and Regulated Waste Management;

(5) The need for contractors to coordinate with DPW Environmental personnel prior to conducting any soil disturbing activities or gaining access to fenced or restricted areas associated with Institutional Controls anywhere on USARAK controlled lands;

d. **Directorate of Plans, Training, Security, and Mobilization** (DPTSM) shall:

(1) Provide all troop units utilizing the training areas information regarding known and potential sources of contamination in the training areas;

(2) Provide information regarding Institutional Controls and the potential fines, penalties, and Criminal implications resulting from violations of the Institutional Controls;

(3) Provide (through the Integrated Training Area Management (ITAM) program) maps and related information regarding USARAK sites with Institutional Controls;

(4) Attend Institutional Controls status update meetings as required by the Installation Commander.

e. **U.S. Army Corps of Engineers, Alaska District** shall ensure that all contract mechanisms incorporate a complete section that provides a detailed explanation of the following information:

(1) The environmental status of the installation in question and the existence of Institutional Controls and the potential fines, penalties, and criminal implications resulting from violations of the Institutional Controls;

(2) The requirements for obtaining an ECR prior to performing any type of excavation, trenching, or disturbance of soil;

(3) The notification requirements for reporting spills, previously unknown soil or ground water contamination, and;

(4) How to dispose of hazardous and non-hazardous wastes, contaminated soil and ground water etc. from USARAK controlled lands in compliance with the requirements of USARAK 200-1 Pamphlet, Hazardous Materials and Regulated Waste Management.

f. **All DOD Personnel** responsible for initiating DA Form 4283, Work Request, are required to become familiar with the Institutional Controls within the immediate work area.

g. **Civilian Tenant Organizations** shall coordinate all work involving the disturbance of soil or installation of a well anywhere on USARAK-controlled lands with the Directorate of Public Works and obtain proper authorization prior to the commencement of work.

h. **Defense Reutilization Management Office** shall dispose of all investigation-derived waste in accordance with the appropriate laws and regulations.

5. Specific procedures and instructions will be provided by DPW Environment Resources to personnel working in areas where Institutional Controls are in place. An after-action report is required as specified in the ECR within 30 days.

6. Work in areas where Institutional Controls are not specified

If Institutional Controls are not specified on the ECR and contamination is found, the following apply:

a. If contaminated soils, drums, unexploded ordnance, or unusual debris are found on or around any work site, the organization conducting the work shall stop work immediately and notify the Fire Department or " 911 "in accordance with USARAK Pamphlet 200-1, Hazardous Materials and Regulated Waste Management. Work at the site will be suspended until the area is cleared by DPW Environment Resources. Site clearance by Range Control is required if unexploded ordnance is involved.

b. Contaminated soil or groundwater removed from the work site must meet container type, sampling and analysis for potential contamination, marking and labeling, and moving and storage requirements specified in Pamphlet 200-1 (above) or as otherwise specified by DPW Environment Resources prior to removal. Soil and groundwater shall not be removed from any part of the installation without written authorization from an authorized USARAK representative. All operations involving hazardous waste will be accomplished in accordance with USARAK Regulation 200-4, Environmental Quality: Hazardous

Waste, Used Oil and Hazardous Materials Management and USARAK Pamphlet 200-1, Hazardous Materials and Regulated Waste Management.

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY ALASKA
600 RICHARDSON DRIVE #5000
FORT RICHARDSON, ALASKA 99505-5000

REPLYTO
ATTENTION OF:

APVR-RPW-EV (200-1c)

12 FEB 2002

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Institutional Controls

1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established Institutional Controls. Institutional controls are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.

2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.

3. Institutional controls such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific institutional controls include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc.

4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) (see enclosure) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or "clean" site) of a work location. ECR's for work in known or suspected hazardous waste sites:

APVR-RPW-EV (200-1c)
SUBJECT: Institutional Controls

a. will include specific limitations and controls on such work;

b. will include specific institutional control procedures, and notification, monitoring, reporting, and stop work requirements;

c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed;

d. will identify "project managers" for both the unit/contractor requesting the work and DPW Environment Resources.

5. The DPW project manager will conduct on-site inspections of each work site (at which institutional controls apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at:

a. Building 730 at Fort Richardson;

b. Building 3015 at Fort Wainwright;

c. Building 605 at Fort Greely.

6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of institutional controls. USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring institutional controls in its real property files. PWE provides regularly updated post maps showing all areas affected by institutional controls. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of institutional controls on contaminated soils and groundwater in effect near their facilities.

7. Institutional controls are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an institutional control mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established institutional control.

APVR-RPW-EV (200-1c)
SUBJECT: Institutional Controls

8. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or memorandum of agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Encl
Excavation Clearance Request

JAMES J. LOVELACE
Major General, USA
Commanding

DISTRIBUTION:
A

S.O.P.

HIGH VOLTAGE POWER LINE LOCK OUT-TAG OUT

I) Purpose: This S.O.P. establishes the policy to be followed when working on the high voltage power system on Ft. Wainwright.

II) APPLICABILITY: This S.O.P applies to all persons working on Ft. Wainwright high voltage power system.

III) GENERAL: This S.O.P. will standardize Lock Out-Tag Out procedures for high voltage work done on Ft. Wainwright.

IV) PROCEDURES:

1. When work is to be performed on or near energized lines the person doing the work or a competent person will go to the power plant, sign in and have the turbine deck operator place a "DO NOT RECLOSE" tag on the breaker of the feeder that is to be worked on.
2. When work is to be performed on a de-energized feeder:
    a. Work will be coordinated with Power Plant and D.P.W. utilities shop foreman and or line crew leader.
    b. If only a portion of a feeder is to be de-energized the person doing the work or a competent person will go to the power plant, sign in and have the turbine deck operator place a "DO NOT RECLOSE" tag on the breaker panel of the feeder that is to be worked on and place a lock and a tag with their name and date on any air switch that is opened.
    c. If the entire feeder is to be de-energized the person doing the work or a competent person will go to the power plant, sign in and have the turbine deck operator place a "DO NOT RECLOSE" on the breaker panel and have the turbine deck operator open the breaker of the feeder to be worked on and lowered it and place a "BREAKER LOWERED" tag on the breaker of the feeder that is to be worked on.
3. De-energized power lines will be tested with an appropriate high voltage tester.
4. Two sets of grounds shall be installed on the power lines that are to be worked on, with the work to be done between the grounds.
5. An opened locked out air switch may be used in place of the second set of grounds if it is within sight of the linemen doing the work and the grounds are placed between them and the source.

6. Upon completion of work all grounds must be removed, all air switches will be returned to there normal position and the person who requested the "DO NOT RECLOSE" tag and/or the "BREAKER LOWERED" tag shall return to the power plant, sign in and have the turbine deck operator remove all tags from breaker panels and return to normal operation.

Charles E. Davenport
Utilities Dist. Foreman
Utilities Section
June 18, 2003

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01721

UTILITY MAINTENANCE INFORMATION SYSTEMS

-- End of Section Table of Contents --

SECTION 01721

UTILITY MAINTENANCE INFORMATION SYSTEMS

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

Data necessary to support a utility maintenance information system shall be provided. This system will electronically provide As-Built and maintenance information to the utility engineers and maintenance crews. The contractor will provide the data specified below in electronic files on CD-ROM, which will be incorporated by the Government into this system. The information required herein is supplemental to any other requirements in this contract.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

As-Built Photos; G, EN-ES-ES.

Photo Spreadsheet; G, EN-ES-ES.

Materials Spreadsheet; G, EN-ES-ES.

AutoCad Schematics; G, EN-ES-ES.

The Contractor shall provide 2-sets of CD-ROM files containing all As-Built photos, spreadsheets, and AutoCad schematics. All CD's shall be submitted in accordance with SECTION 01780 CLOSEOUT SUBMITTALS.

1.3 AUTOCAD SCHEMATICS

AM#1... Contractor shall provide As-Built single-line schematics for each utility site (utilidor manhole, sewer manhole, fire hydrant manhole, building mechanical room utilidor pit, and other piping intersections/terminations) which is affected by the work under this contract. The schematics shall show show all piping and appurtenance, all structural features including, walls, floors, columns an beams, all vents, access hatches, ladders, Sump-pits, grating, Electrical Panes, and other features which may require maintenance, or may affect how maintenance can be performed. The schematics shall dimension all of the structural feature on the plans and sections, and dimension the location of the pipes (horizontal and vertical) on the sections. The schematics shall accurately

represent the utility site after all work in this contract is complete and shall consist of three to six sketches as follows:**...AM#1**

a. Upper Plan (typically showing only the upper level of piping),

b. Lower Plan (typically showing the lower level piping). Lower plan is optional only if there is a single layer of utilities (i.e. pancake configuration),

c. Middle Plan (shows any piping not shown on the upper or lower plans, typically only required for complicated sites with multiple levels of piping),

d. Section(s) (showing the section cuts looking in the direction of each tunnel on one or two sketches depending on quantity/complexity), and

e. Photo Plan (showing the location and direction of each As-Built photo provided).

AM#1... When draftng is complete, a purge all command shall be executed. Before saving a zoom all command shall be executed in each layout and model space**....AM#1**

The Government will provide, via access to the Utility System Web site hyper-link (listed below), single-line schematics in AutoCAD 2000 format of the existing (pre-contract)utility sites. The Contractor shall edit these drawings to make them complete and accurate. The Contractor shall create new drawings for all new utility sites. The contractor shall maintain the drawing conventions established in the provided schematics. The Contractor shall return the completed drawings in AutoCAD 2000 DWG format. A sample of the single line schematics for a utility site is attached as Attachments 1 thru 4. Existing schematics can also be found on the Utility System Web site hyper-link listed below:

AM#1...http://iss.poa.usace.army.mil/projects/ftw288
username: ftw288
password: Santiago Ave.**...AM#1**

The username and password are case sensitive, and the password includes a space and a trailing period. They will only be valid during the bidding process. The successful bidder will issued a new username and password.

These schematics use AutoCAD blocks with attributes to identify the various items on the drawings (i.e. pipes, valves, etc). The names and structure of these blocks is utilized in an automated process to associate the information provided in the materials lists (specified below) with the graphical elements on the drawing. The blocks must not be exploded or modified. There must be a one-to-one correlation between the items shown on the schematics and the materials lists provided. Any submittals not meeting these requirements will be returned for correction. A blank template with all necessary blocks can be obtained on the web site.

If additional items (i.e. pipes, valves, etc) are required to reflect the

As-Built conditions, they shall be added to the drawings and named as specified below. Each item shall be named sequentially, and there shall be no duplicate names at any site. For example, if a manhole has two valves, they will be named V1 and V2. If a third valve is added it shall be named V3.

1.4 AS-BUILT PHOTOS

Electronic photos shall be taken to document the as-built conditions. Photos shall be taken only after all work is complete at a site. Photos shall be taken with a flash and a 28 mm or less wide-angle lens. If the wide-angle lens obscures the built-in flash, then an external flash assembly shall be used. Photos shall be in color, have a resolution of at least 3 megapixels, and be provided in JPEG format.

At least 15 unique electronic photos shall be taken inside each site, except mechanical room pits only require 10, and hydrant manholes - 5. These numbers are minimums and additional photos may be required to meet the following requirements: The photos shall document each pipe entering or leaving the space, and all the appurtenances in or adjacent to that space. Photos shall be taken from different elevations, locations, and directions to get perspective from different directions on all the pipes and appurtenances at the site. In utilidor manholes, at least one photo shall be provided at least 5 feet inside all accessible tunnels, looking back at the utilidor manhole.

Two additional photos, from different locations, shall be taken of the exterior of each utility site.

Photos shall be submitted on CD-ROM with all photos for each location in a separate folder. The folders shall be given the name of the utility site. New sites shall use the naming system described later.

1.4.1 As-built photos list

Each photo shall be logged in a MS Excel photo spreadsheet, indicating the name of the utility site as described in the naming system below, the subject of the photo, the direction of the photo, (N, NE, NNE, S, etc), the date, the contractor, and the electronic filename. A single spreadsheet shall be used for all photos. An empty copy of this spreadsheet can be found on the website.

1.4.2 As-built photos drawings

The location and direction of the camera for each photo shall be shown on the electronic AutoCAD schematics using the photo arrow blocks. The attribute of the block shall contain the filename of the photo. Prefixes and extensions on the filename shall be omitted to shorten the name as much as possible, while still providing a unique filename (i.e. file name DCN00231.jpg should be 231). The attributes of the photo block will by used by the Government to automatically create a hyper-link to the photo file. An example of this can be found on the utility system website.

1.4.3 Photo Coordination

The electronic photos, list, and drawings will be returned if there is not a 100 percent match between the photos, the lists and drawings provided.

1.5 MATERIALS SPREADSHEET

The actual materials and equipment installed as part of this project will be documented for engineering and maintenance purposes. Each item, as described below, will be listed with its salient features in MS Excel spreadsheets.

A blank copy of the spreadsheet for each type of item can be found on the website. The spreadsheet has a column headings for each feature of an item. The contractor shall list each item in a single row in the appropriate spreadsheet. There shall be no rows that are blank, or contain other information. The contractor shall not modify the structure of the spreadsheet. Some columns may not be wide enough to show all information when printed (i.e. a long manufacturer's name). This is acceptable, provided that the complete information has been entered into the field.

There must be an exact one-to-one correlation between the items shown on the schematics, and the items in the materials lists. The lists and schematics will go through an automatic process, which will check for any mis-matches between the two. Drawings and lists that do not match will be returned to the contractor for correction.

If the same item (i.e. 10" Steel Pipe) is installed at multiple sites, it must be listed (with all attributes) multiple times, once for each site.

The following information shall be recorded for each type of item:

1.5.1 Pipes

a. Site - The manhole, or mechanical room per the naming system below, i.e. "I5-6-10".

b. Tag - The unique name for this item as labeled on the schematic, i.e. "W2".

c. Date Installed - i.e. "7/24/01".

d. Manufacturer's Name.

e. Manufacturer's Model Number.

f. Material.

g. Nominal diameter (inches).

h. Wall thickness excluding liner (inches).

i. Liner material.

j. Liner thickness (inches).

k. Insulation material.

l. Insulation thickness (inches).

1.5.2 Valves

a. Site - The manhole, or mechanical room per the naming system below, i.e. "I5-6-10".

b. Tag - The unique name for this item as labeled on the schematic, i.e. "V2".

c. Date Installed - i.e. "7/24/01".

d. Manufacturer's Name.

e. Manufacturer's Model Number.

f. Type (gate, ball, check, air/vacuum-relief, etc.).

g. Material.

h. Size (Nominal diameter in inches).

i. Class.

j. Stem Type.

1.5.3 Expansion Joints

a. Site - The manhole per the naming system below, i.e. "I5-6-10".

b. Tag - The unique name for this item as labeled on the schematic, i.e. "EJ2".

c. Date Installed - i.e. "7/24/01".

d. Manufacturer's Name.

e. Manufacturer's Model Number.

f. Nominal diameter (inches).

g. Stroke length (inches).

h. Connection Type (welded, flanged, etc).

i. Seal type (packed or packless).

1.5.4 Steam Traps

a. Site - The manhole, or mechanical room per the naming system below,

i.e. " I5-6-10".

b. Tag - The unique name for this item as labeled on the schematic, i.e. "TR1".

c. Date Installed - i.e. "7/24/01".

d. Manufacturer's Name.

e. Manufacturer's Model Number.

f. Inlet/outlet size (inches).

1.5.5 Pumps

a. Site - The manhole, or mechanical room per the naming system below, i.e. " I5-6-10".

b. Tag - The unique name for this item as labeled on the schematic, i.e. "P2".

c. Date Installed - i.e. "7/24/01".

d. Manufacturer's Name.

e. Manufacturer's Model Number.

f. Manufacturer's Serial Number.

g. Inlet size (inches).

h. Outlet size (inches).

i. Horsepower.

j. gpm1 head1
gpm2 head2

1.5.6 Hydrants

a. Site - The manhole per the naming system below, i.e. "I5-6-10".

b. Date Installed - i.e. "7/24/01".

c. Manufacturer's Name.

d. Manufacturer's Model Number.

e. Valve opening size (inches).

f. Pumper connection size (inches).

g. Hose connection sizes (inches).

1.5.7 Naming System

Utility sites shall be named as shown on drawing C-1.

Items like pipes that are shown on the schematics, and described in the materials lists are named as follows:

a. Pipes shall be identified at each point that they enter or exit the location, and as necessary if they exist solely within the location. Each pipe shall receive a unique designation. Pipes which pass through the location unchanged, i.e. they are the same size, material, etc, can have the same designation at each end. In each location the first water line will receive the designation W1, the second, W2, etc. The order of the numbering is arbitrary. Sewer lines shall be numbered S1, S2, etc., Steam lines shall be designated H1, H2, etc., Condensate lines shall be numbered C1, C2, etc., Trace lines (connecting a Steam line to a Condensate line through a trap), shall be designated T1, T2, etc., any other miscellaneous pipes shall be designated MP1, MP2, etc.

b. Valves of all types, shall be named V1, V2, etc.

c. Expansion Joints shall be named EJ1, EJ2, etc.

d. Steam Traps shall be named TR1, TR2, etc.

e. Pumps shall be named P1, P2, etc.

f. Hydrants do not get a name, since there is only one hydrant per location.

Items shown on the drawings, but not described in the materials lists are named as follows:

a. Anchors shall be named A1, A2, etc. (note: all anchors must be shown on the drawings, but no material list is required)

b. Cleanouts shall be named CO1, CO2, etc. (note: all cleanout must be shown on the drawings, but no material list is required)

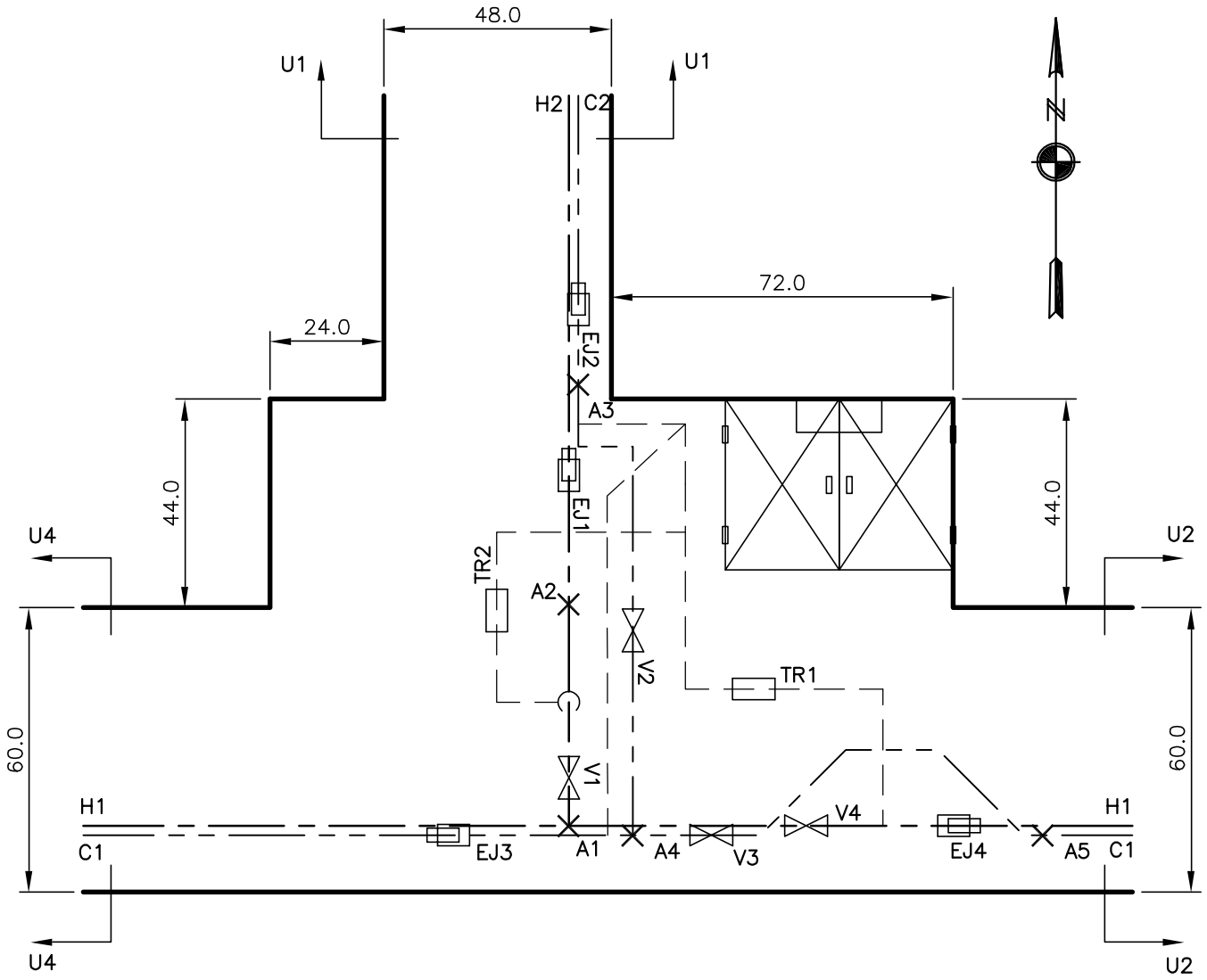
c. Tunnels, shall be named U1 - North, U2 - East, U3 - South, and U4 - West.

1.6 ATTACHMENTS

Single line schematics (4-pages)

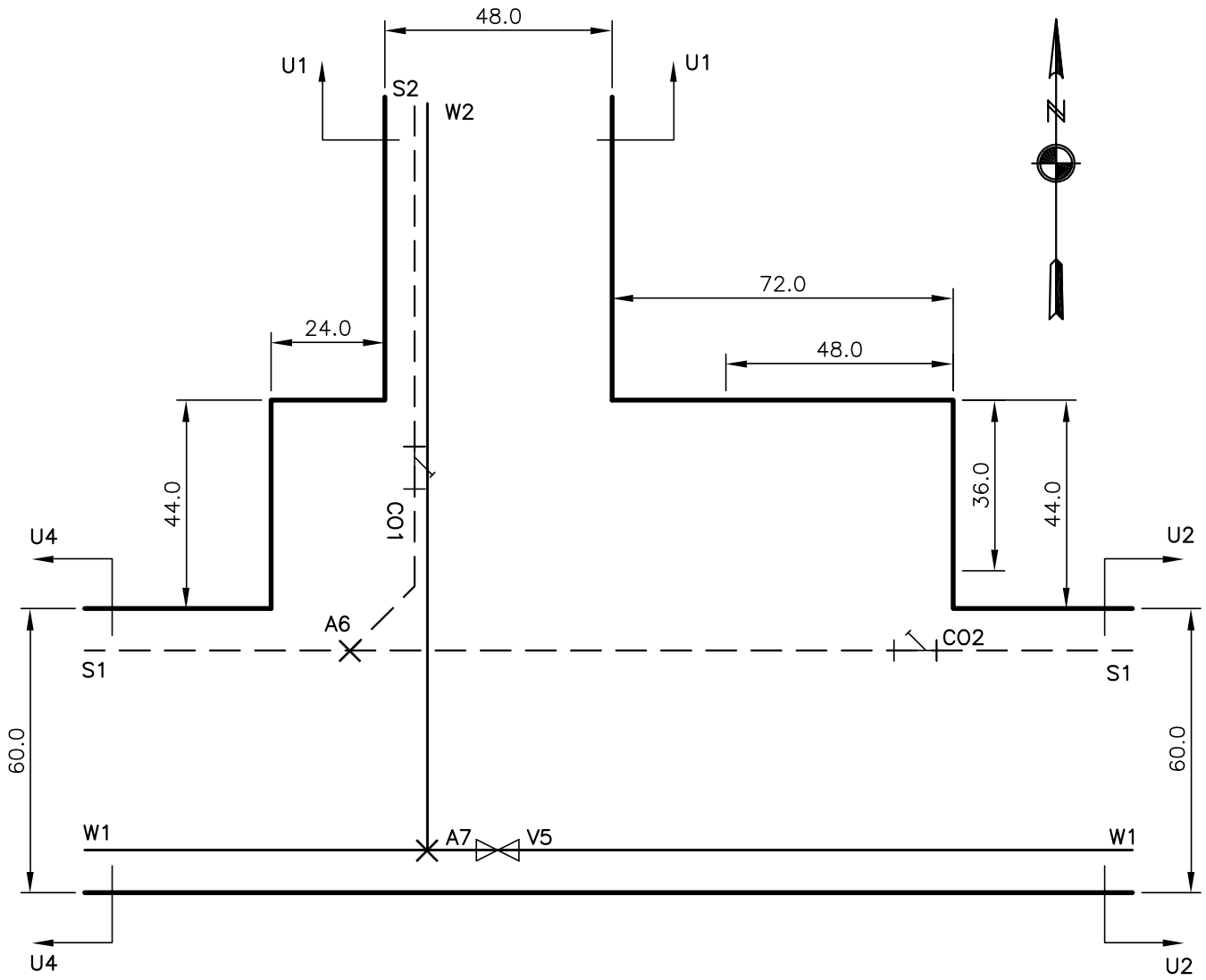
PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED



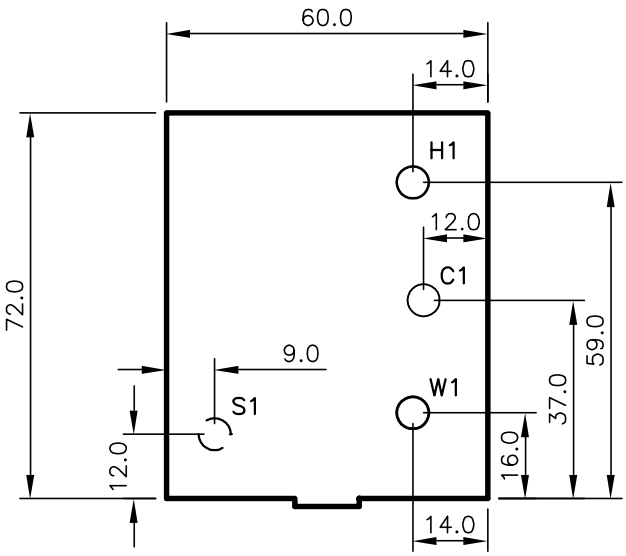
Upper Plan

Manhole: MH 602	Inspector: KTR	***Fort Wainwright Utility Inventory and Assessment***	
Sheet: 1 of 4	Date: 1	SECTION 01721 - 9	Manhole Plan and Sections

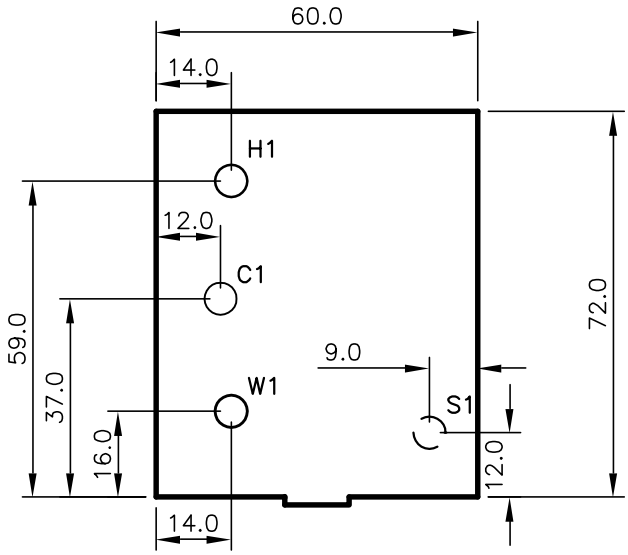


Lower Plan

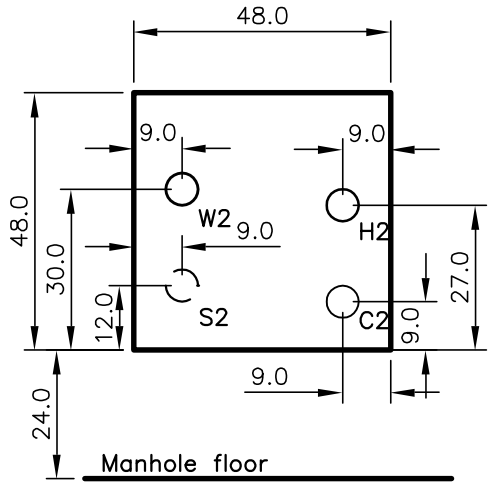
Manhole: MH 602	Inspector: KTR	***Fort Wainwright Utility Inventory and Assessment***
Sheet: 2 of 4	Date:	Manhole Plan and Sections



U2 (East)



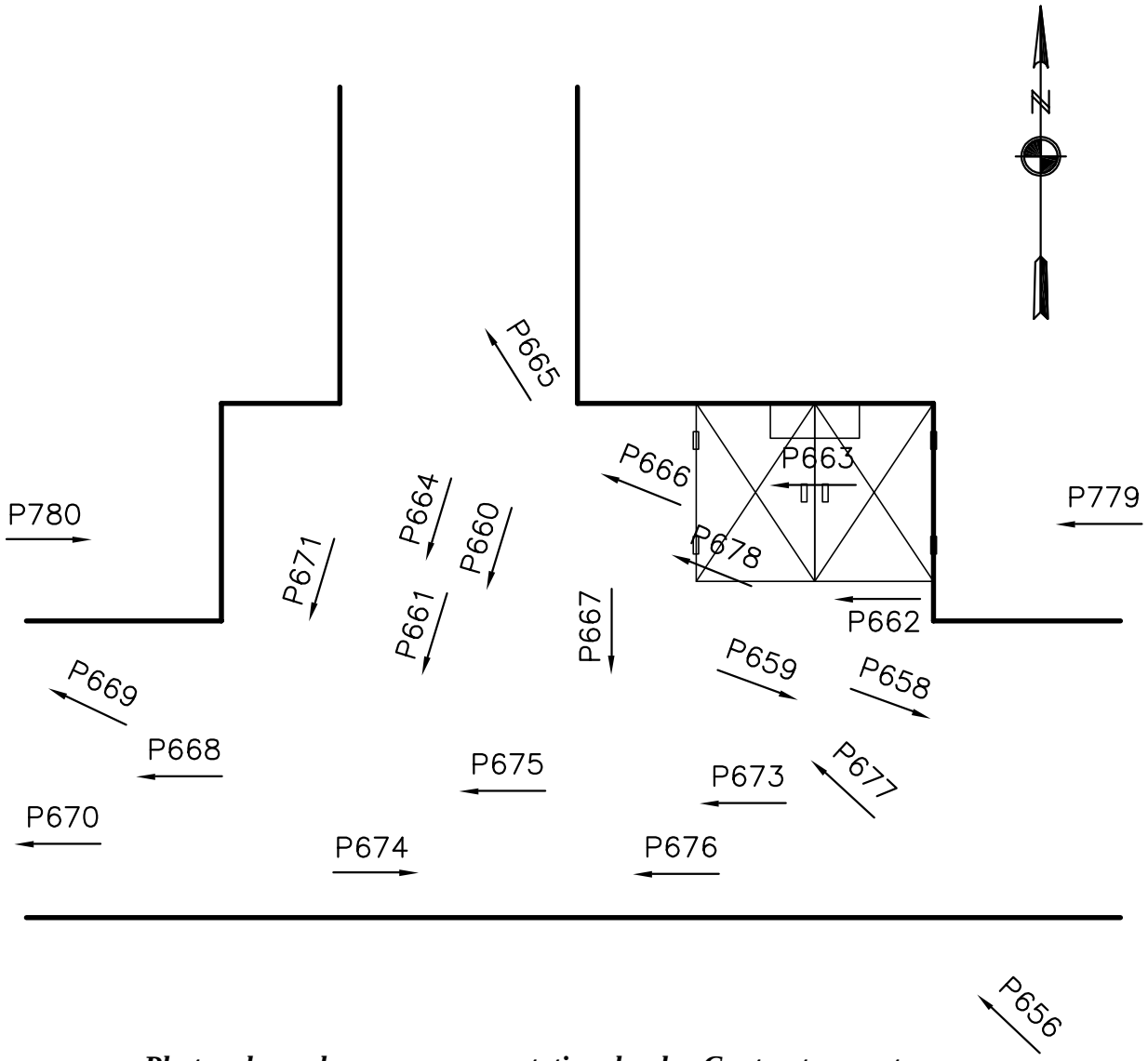
U4 (West)



U1 (North)

Sections

Manhole: MH 602	Inspector: KTR	***Fort Wainwright Utility Inventory and Assessment***
Sheet: 3 of 4	Date:	Manhole Plan and Sections



Photos shown here are representational only. Contractor must move, rotate, and edit these symbols to match the photos taken as required by the specifications.
Note: these symbols are blocks which must not be exploded.

Photo Plan

Manhole: MH 602	Inspector: KTR	***Fort Wainwright Utility Inventory and Assessment***
Sheet: 4 of 4	SECTION 01721 - 12□	Manhole Plan and Sections

--END OF SECTION--

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16402

INTERIOR DISTRIBUTION SYSTEM

-- End of Section Table of Contents --

SECTION 16402

INTERIOR DISTRIBUTION SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B 1	(2001) Hard-Drawn Copper Wire
ASTM B 8	(1999) Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM D 709	(2001) Laminated Thermosetting Materials

ELECTRONIC INDUSTRIES ASSOCIATION (EIA) / TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)

EIA TIA/EIA-569-A	(1998; Addendum 2000, 2001) Commercial Building Standards for Telecommunications Pathways and Spaces (ANSI/TIA/EIA-569-A)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2	(2002) National Electrical Safety Code (IEEE)
IEEE STD 81	(1983) Guide for Measuring Earth Resistivity Ground Impedance and Earth Surface Potentials of a Ground System (Part 1)
IEEE Std 100	(2000) Dictionary of Electrical and Electronics Terms (IEEE)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(2003) Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA C80.1	(1994) Rigid Steel Conduit - Zinc Coated
NEMA ICS 1	(2000) Industrial Control and Systems General Requirements

NEMA ICS 2	(2000) Industrial Control and Systems Controllers, Contactors, and Overload Relays, Rated 600 Volts
NEMA ICS 6	(1993; R 2001) Industrial Control and Systems , Enclosures
NEMA KS 1	(2001) Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum)
NEMA MG 1	(2003) Motors and Generators
NEMA MG 10	(2001) Energy Management Guide for Selection and Use of Fixed Medium AC Squirrel Cage Polyphase Induction Motors
NEMA MG 11	(2001) Energy Management Guide for Selection and Use of Single-Phase Motors
NEMA TC 2	(1998) Electrical Polyvinyl Chloride (PVC) Tubing and Conduit
NEMA TC 3	(1999) PVC Fittings for Use with Rigid PVC Conduit and Tubing
NEMA WD 1	(1999) General Color Requirements for Wiring Devices
NEMA WD 6	(2002) Wiring Devices - Dimensional Specifications
NEMA Z535.4	(2002) Product Safety Signs and Labels

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 70E	(2000) Electrical Safety Requirements for Employee Workplaces

UNDERWRITERS LABORATORIES (UL)

UL 1	(2000) Flexible Metal Conduit
UL 6	(2000; Bul. 2001, 2002) Rigid Metal Conduit - Steel
UL 20	(2000; R 2002, Bul. 2002) General-Use Snap Switches
UL 44	(1999; R 2002, Bul. 2002) Thermoset-Insulated Wires and Cables

UL 50	(1995; R 1999, Bul. 2001) Enclosures for Electrical Equipment
UL 67	(1993; R 2002) Panelboards
UL 83	(1998; R 2001, Bul. 2002) Thermoplastic-Insulated Wires and Cables
UL 360	(1996; R 2001, Bul. 2002) Liquid-Tight Flexible Steel Conduit
UL 467	(1993; R 2001) Grounding and Bonding Equipment
UL 486A	(1997; R 2001, Bul. 2002, 2003) Wire Connectors and Soldering Lugs for Use with Copper Conductors
UL 486B	(1997; R 2001, Bul. 2002, 2003) Wire Connectors for Use with Aluminum Conductors
UL 486C	(2000; R 2002) Splicing Wire Connectors
UL 489	(2002; R 2002, Bul. 2003) Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures
UL 498	(2001; R 2002) Attachment Plugs and Receptacles
UL 508	(1999; R 2002, Bul. 2003) Industrial Control Equipment
UL 510	(1994; R 1998) Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape
UL 514A	(1996; R 2001, Bul. 2002) Metallic Outlet Boxes
UL 514B	(1997; R 2002, Bul. 2002) Fittings for Cable and Conduit
UL 514C	(1996; R 2002) Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL 651	(1995; R 2002) Schedule 40 and 80 Rigid PVC Conduit
UL 817	(1994); Rev thru May 1999) Cord Sets and Power Supply Cords
UL 869A	(1998; Bul. 2002) Reference Standard for Service Equipment

UL 943	(1993; R 2002, Bul. 2002) Ground-Fault Circuit-Interrupters
UL 1063	(1993; Rev. thru Oct 1994) Machine-Tool Wire and Cables

1.2 DEFINITIONS

Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Panelboards;

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

Wireways;

SD-03 Product Data

Receptacles;

Circuit breakers;

Switches;

Motor controllers;

Combination motor controllers;

Submittals shall include performance and characteristic curves.

SD-06 Test Reports

600-volt wiring test;

Grounding system test;

Ground-fault receptacle test;

1.4 QUALITY ASSURANCE

1.4.1 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.4.2 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

1.4.2.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.4.2.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

1.5 MAINTENANCE

1.5.1 Electrical Systems

Submit operation and maintenance manuals for electrical systems that provide basic data relating to the design, operation, and maintenance of the electrical distribution system for the building. This shall include:

a. Single line diagram of the "as-built" building electrical system.

b. Schematic diagram of electrical control system.

c. Manufacturers' operating and maintenance manuals on active electrical equipment.

1.6 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.7 SEISMIC REQUIREMENTS

Seismic details shall conform to Section 16070A, SEISMIC PROTECTION FOR ELECTRICAL EQUIPMENT.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Materials, equipment, and devices shall, as a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 70.

2.2 CONDUIT AND FITTINGS

Shall conform to the following:

2.2.1 Rigid Metallic Conduit

2.2.1.1 Rigid, Threaded Zinc-Coated Steel Conduit

NEMA C80.1, UL 6.

2.2.2 Rigid Nonmetallic Conduit

PVC Type EPC-40 in accordance with NEMA TC 2,UL 651.

2.2.3 Flexible Metal Conduit

UL 1.

2.2.3.1 Liquid-Tight Flexible Metal Conduit, Steel

UL 360.

2.2.4 Fittings for Flexible Metal Conduit

UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.

2.2.4.1 Fittings for Rigid Metal Conduit

Threaded-type. Split couplings unacceptable.

2.2.5 Fittings for Rigid Nonmetallic Conduit

NEMA TC 3 for PVC and UL 514B.

2.3 OUTLET BOXES AND COVERS

UL 514A, cadmium- or zinc-coated, if ferrous metal. UL 514C, if nonmetallic.

2.4 CABINETS, JUNCTION BOXES, AND PULL BOXES

Volume greater than 100 cubic inches, UL 50, hot-dip, zinc-coated, if sheet steel.

2.5 WIRES AND CABLES

Wires and cables shall meet applicable requirements of NFPA 70 and UL for type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to site shall not be used.

2.5.1 Conductors

Conductors No. 8 AWG and larger diameter shall be stranded. Conductors No. 10 AWG and smaller diameter shall be solid, except that conductors for remote control, alarm, and signal circuits, classes 1, 2, and 3, shall be stranded unless specifically indicated otherwise. Conductor sizes and ampacities shown are based on copper, unless indicated otherwise. All conductors shall be copper.

2.5.1.1 Minimum Conductor Sizes

Minimum size for branch circuits shall be No. 12 AWG; for Class 1 remote-control and signal circuits, No. 14 AWG; for Class 2 low-energy, remote-control and signal circuits, No. 16 AWG; and for Class 3 low-energy, remote-control, alarm and signal circuits, No. 22 AWG.

2.5.2 Color Coding

Provide for service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors and white for neutrals; except where neutrals of more than one system are installed in same raceway or box, other neutrals shall be white with a different colored (not green) stripe for each. Color of ungrounded conductors in different voltage systems shall be as follows:

a. 208/120 volt, three-phase

(1) Phase A - black

(2) Phase B - red

(3) Phase C - blue

b. 120/240 volt, single phase: Black and red

2.5.3 Insulation

Unless specified or indicated otherwise or required by NFPA 70, power and lighting wires shall be 600-volt, Type XHHW conforming to UL 44, except that grounding wire may be type TW conforming to UL 83; remote-control and signal circuits shall be Type TW or TF, conforming to UL 83. Where lighting fixtures require 90-degree Centigrade (C) conductors, provide only conductors with 90-degree C insulation or better.

2.5.4 Bonding Conductors

ASTM B 1, solid bare copper wire for sizes No. 8 AWG and smaller diameter; ASTM B 8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.

2.5.5 Cord Sets and Power-Supply Cords

UL 817.

2.6 SPLICES AND TERMINATION COMPONENTS

UL 486A and UL 486B, as applicable, for wire connectors and UL 510 for insulating tapes. Connectors for No. 10 AWG and smaller diameter wires shall be insulated, pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

2.7 DEVICE PLATES

Provide UL listed, device plates for outlets to suit the devices installed. Plates installed in wet locations shall be gasketed and UL listed for "wet locations."

2.8 SWITCHES

2.8.1 Toggle Switches

NEMA WD 1, UL 20,single pole, three-way, and four-way, totally enclosed with bodies of thermoplastic or thermoset plastic and mounting strap with grounding screw. Handles shall be thermoplastic. Wiring terminals shall be screw-type. Contacts shall be silver-cadmium and contact arm shall be one-piece copper alloy. Switches shall be rated ac only, 120/277 volts, with current rating and number of poles indicated.

2.8.2 Disconnect Switches

NEMA KS 1. Provide heavy duty-type switches where indicated. Fused switches shall utilize Class R fuseholders and fuses, unless indicated otherwise. Switches serving as motor-disconnect means shall be horsepower rated. Provide switches in NEMA 3R , enclosure per NEMA ICS 6.

2.9 RECEPTACLES

UL 498, hard use, heavy-duty, UL 498, grounding-type. Ratings and configurations shall be as indicated. Bodies shall be per NEMA WD 1. Face and body shall be thermoplastic supported on a metal mounting strap. Dimensional requirements shall be per NEMA WD 6. Provide screw-type terminals. Connect grounding pole to mounting strap. The receptacle shall contain triple-wipe power contacts and double or triple-wipe ground contacts.

2.9.1 Weatherproof Receptacles

Provide in cast metal box with gasketed, weatherproof, cast-metal cover plate and gasketed cap over each receptacle opening. Provide caps with a spring-hinged flap. Receptacle shall be UL listed for use in "wet locations with plug in use."

2.9.2 Ground-Fault Circuit Interrupter Receptacles

UL 943, duplex type for mounting in standard outlet box. Device shall be capable of detecting current leak of 6 milliamperes or greater and tripping per requirements of UL 943 for Class A GFCI devices. Provide screw-type wiring terminals.

2.9.3 Special Purpose Receptacles

Receptacles serving pumps are special purpose. Provide in ratings indicated. Furnish one matching plug with each receptacle.

2.9.4 Plugs

Provide heavy-duty, rubber-covered cord of required size, install plugs thereon, and attach to equipment. Plugs shall be UL listed with receptacles, complete with grounding blades.

2.10 PANELBOARDS

UL 67 and UL 50 having a short-circuit current rating as indicated . Panelboards for use as service disconnecting means shall additionally conform to UL 869A. Panelboards shall be circuit breaker-equipped unless indicated otherwise. Design shall be such that individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as means of obtaining clearances as required by UL. "Specific breaker placement" is required in panelboards to match the breaker placement indicated in the panelboard schedule on the drawings. Main breaker shall be "separately" mounted "above" branch breakers. Where "space only" is indicated, make provisions for future installation of breakers. Directories shall indicate load served by each circuit in panelboard. Directories shall also indicate source of service to panelboard. Provide new directories for existing panels modified by this project as indicated. Type directories and mount in holder behind transparent protective covering. Panelboards shall be listed and labeled for their intended use. Panelboard shall have nameplates in accordance with paragraph FIELD FABRICATED NAMEPLATES.

UL 67 and UL 50. Panelboards for use as service disconnecting means shall additionally conform to UL 869A. Panelboards shall be circuit breaker-equipped. Design shall be such that individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as means of obtaining clearances as required by UL. Where "space only" is indicated, make provisions for future installation of breaker sized as indicated. Directories shall indicate load served by each circuit of panelboard. Directories shall also indicate source of service . Type directories and mount in holder behind transparent protective covering. Panelboard shall have nameplates in accordance with paragraph FIELD FABRICATED NAMEPLATES.

2.10.1 Enclosure

AM#1... Enclosures for alarm system inside utilidor shall be fiberglass construction. Enclosures for power and lighting inside utilidor shall be aluminum. Outdoor power enclosures shall meet the requirements of UL 50. All outdoor cabinets shall be fabricated from sheet steel of not less than 3.5 millimeters (No. 10 gauge), with full seam-welded box ends. Cabinets shall be painted in accordance with paragraph PAINTING. Outdoor cabinets shall be of NEMA 3R raintight with conduit hubs. Front edges of cabinets shall be form-flanged or fitted with structural shapes welded or riveted to the sheet steel, for supporting the panelboard front. All cabinets shall be so fabricated that no part of any surface on the finished cabinet shall deviate from a true plane by more than 3 millimeters (1/8 inch). Holes shall be provided in the back of indoor surface-mounted cabinets, with outside spacers and inside stiffeners, for mounting the cabinets with a 15 millimeter (1/2 inch) clear space between the back of the cabinet and the wall surface. Flush doors shall be mounted on hinges that expose only the hinge roll to view when the door is closed. Each door shall be fitted with a combined catch and lock, except that doors over 600 millimeters (24 inches) long shall be provided with a three-point latch having a knob with a T-handle, and a cylinder lock. Two keys shall be provided with each lock, and all locks shall be keyed alike. Finished-head cap screws shall be provided for mounting the panelboard fronts on the cabinets.**...AM#1**

2.10.2 Panelboard Buses

Support bus bars on bases independent of circuit breakers. Main buses and back pans shall be designed so that breakers may be changed without machining, drilling, or tapping. Provide isolated neutral bus in each panel for connection of circuit neutral conductors. Provide separate ground bus identified as equipment grounding bus per UL 67 for connecting grounding conductors; bond to steel cabinet.

2.10.3 Circuit Breakers

UL 489, thermal magnetic-type having a minimum short-circuit current rating equal to the short-circuit current rating of the panelboard in which the circuit breaker shall be mounted. Breaker terminals shall be UL listed as suitable for type of conductor provided. Series rated circuit breakers and plug-in circuit breakers are unacceptable.

2.10.3.1 Multipole Breakers

Provide common trip-type with single operating handle. Breaker design shall be such that overload in one pole automatically causes all poles to open. Maintain phase sequence throughout each panel so that any three adjacent breaker poles are connected to Phases A, B, and C, respectively.

2.10.3.2 Circuit Breaker With GFCI

UL 943 and NFPA 70. Provide with "push-to-test" button, visible indication of tripped condition, and ability to detect and trip on current imbalance of 6 milliamperes or greater per requirements of UL 943 for Class A GFCI devices, for personnel protection.

2.11 MOTORS

NEMA MG 1 Provide the size in terms of HP of each motor as indicated or specified. Determine specific motor characteristics to ensure provision of correctly sized starters and overload heaters. Motors for operation on 208-volt, 3-phase circuits shall have terminal voltage rating of 200 volts. Motors shall be designed to operate at full capacity with voltage variation of plus or minus 10 percent of motor voltage rating. Unless otherwise indicated, motors rated 1 HP and above shall be continuous duty type.

Where fuse protection is specifically recommended by the equipment manufacturer, provide fused switches in lieu of non-fused switches indicated.

2.11.1 High Efficiency Single-Phase Motors

Single-phase fractional-horsepower alternating-current motors shall be high efficiency types corresponding to the applications listed in NEMA MG 11.

2.11.2 Premium Efficiency Polyphase Motors

Polyphase motors shall be selected based on high efficiency characteristics relative to typical characteristics and applications as listed in NEMA MG 10.

2.11.3 Motor Sizes

Provide size for duty to be performed, not exceeding the full-load nameplate current rating when driven equipment is operated at specified capacity under most severe conditions likely to be encountered. When motor size provided differs from size indicated or specified, make adjustments to wiring, disconnect devices, and branch circuit protection to accommodate equipment actually provided. Provide controllers for motors rated 1-hp and above with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage. Provide protection for motors from immediate restart by a time adjustable restart relay.

2.11.4 Wiring and Conduit

Provide internal wiring for components of packaged equipment as an integral

part of the equipment. Provide power wiring and conduit for field-installed equipment as specified herein. Control wiring shall be provided under, and conform to the requirements of the section specifying the associated equipment.

2.12 MOTOR CONTROLLERS

UL 508, NEMA ICS 1, and NEMA ICS 2,. Controllers shall have thermal overload protection in each phase and shall have one spare normally open and one spare normally closed auxiliary contact. Provide controllers for motors rated 1-hp and above with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage. Provide protection for motors from immediate restart by a time adjustable restart relay. Magnetic-type motor controllers shall have undervoltage protection when used with momentary-contact pushbutton stations or switches and shall have undervoltage release when used with maintained-contact pushbutton stations or switches. When used with pressure, float, or similar automatic-type or maintained-contact switch, controller shall have hand/off/automatic selector switch. Connections to selector switch shall be such that only normal automatic regulatory control devices are bypassed when switch is in "hand" position. Safety control devices, such as low and high pressure cutouts, high temperature cutouts, and motor overload protective devices, shall be connected in motor control circuit in "hand" and "automatic" positions. Control circuit connections to hand/off/automatic selector switch or to more than one automatic regulatory control device shall be made in accordance with indicated or manufacturer's approved wiring diagram. For each motor not in sight of controller or where controller disconnecting means is not in sight of motor location and driven machinery location, controller disconnecting means shall be capable of being locked in open position. As an alternative, provide a manually operated, lockable, nonfused switch which disconnects motor from supply source within sight of motor. Overload protective devices shall provide adequate protection to motor windings; be thermal inverse-time-limit type; and include manual reset-type pushbutton on outside of motor controller case. Cover of combination motor controller and manual switch or circuit breaker shall be interlocked with operating handle of switch or circuit breaker so that cover cannot be opened unless handle of switch or circuit breaker is in "off" position.

2.12.1 Control Wiring

All control wire shall be stranded tinned copper switchboard wire with 600-volt flame-retardant insulation Type SIS meeting UL 44, or Type MTW meeting UL 1063, and shall pass the VW-1 flame tests included in those standards. Hinge wire shall have Class K stranding. Current transformer secondary leads shall be not smaller than No. 10 AWG. The minimum size of control wire shall be No. 14 AWG.

2.12.2 Enclosures for Motor Controllers

NEMA ICS 6.

2.12.3 Pilot and Indicating Lights

Provide LED cluster lamps.

2.13 TELECOMMUNICATIONS SYSTEM

Provide system of telecommunications wire-supporting structures (pathway), including: outlet boxes, conduits with pull wires and other accessories for telecommunications outlets and pathway as specified herein.

2.14 GROUNDING AND BONDING EQUIPMENT

2.14.1 Ground Rods

UL 467. Ground rods shall be copper-clad steel, with minimum diameter of 3/4 inch and minimum length of 10 feet.

2.15 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.16 FIELD FABRICATED NAMEPLATES

ASTM D 709. Provide laminated plastic nameplates for each equipment enclosure, and device; as specified or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

2.17 WARNING SIGNS

Provide warning signs for flash protection in accordance with NFPA 70E and NEMA Z535.4 for switchboards, panelboards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing, or maintenance while energized. Provide field installed signs to warn qualified persons of potential electric arc flash hazards when warning signs are not provided by the manufacturer. The marking shall be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

2.18 FACTORY APPLIED FINISH

Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test and the additional requirements as specified herein. Interior and exterior steel surfaces of equipment enclosures shall be thoroughly cleaned and then receive a rust-inhibitive phosphatizing or equivalent treatment

prior to painting. Exterior surfaces shall be free from holes, seams, dents, weld marks, loose scale or other imperfections. Interior surfaces shall receive not less than one coat of corrosion-resisting paint in accordance with the manufacturer's standard practice. Exterior surfaces shall be primed, filled where necessary, and given not less than two coats baked enamel with semigloss finish. Equipment located indoors shall be ANSI Light Gray, and equipment located outdoors shall be ANSI Light Gray. Provide manufacturer's coatings for touch-up work.

PART 3 EXECUTION

3.1 INSTALLATION

Electrical installations, including weatherproof shall conform to requirements of NFPA 70 and IEEE C2 and to requirements specified herein.

3.1.1 Underground Service

Underground service conductors and associated conduit shall be continuous from service entrance equipment to outdoor power system connection.

3.1.2 Overhead Service

Overhead service conductors into buildings shall terminate at service entrance fittings or weatherhead outside building. Overhead service conductors and support bracket for overhead conductors are included in Section 16370A, ELECTRICAL DISTRIBUTION SYSTEM, AERIAL.

3.1.3 Service Entrance Identification

Service entrance disconnect devices, switches, and enclosures shall be labeled and identified as such.

3.1.3.1 Labels

Wherever work results in service entrance disconnect devices in more than one enclosure, as permitted by NFPA 70, each enclosure, new and existing, shall be labeled as one of several enclosures containing service entrance disconnect devices. Label, at minimum, shall indicate number of service disconnect devices housed by enclosure and shall indicate total number of enclosures that contain service disconnect devices. Provide laminated plastic labels conforming to paragraph FIELD FABRICATED NAMEPLATES. Use lettering of at least 0.25 inch in height, and engrave on black-on-white matte finish. Service entrance disconnect devices in more than one enclosure, shall be provided only as permitted by NFPA 70.

3.1.4 Wiring Methods

Provide insulated conductors installed in rigid steel conduit, except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated green equipment grounding conductor for circuit(s) installed in conduit and raceways. Minimum conduit size shall be 3/4 inch in diameter for low voltage lighting and

power circuits.

3.1.4.1 Pull Wire

Install pull wires in empty conduits. Pull wire shall be plastic having minimum 200-pound force tensile strength. Leave minimum 36 inches of slack at each end of pull wire.

3.1.5 Conduit Installation

U Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members .

3.1.5.1 Restrictions Applicable to Flexible Conduit

Use only as specified in paragraph FLEXIBLE CONNECTIONS.

3.1.5.2 Service Entrance Conduit, Overhead

Rigid steel from service entrance to service entrance fitting or weatherhead outside building.

3.1.5.3 Service Entrance Conduit, Underground

Galvanized rigid steel. Underground portion shall be installed minimum 18 inches below slab or grade.

3.1.5.4 Conduit Support

Support conduit by pipe straps, wall brackets, or hangers. Fasten by concrete inserts or expansion bolts on concrete; and by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Load applied to fasteners shall not exceed one-fourth proof test load. Fasteners attached to concrete ceiling shall be vibration resistant and shock-resistant. Holes cut to depth of more than 1 1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete joints shall not cut main reinforcing bars. Fill unused holes. Conduit and box systems supporting means shall not be shared between electrical raceways and mechanical piping. Installation shall be coordinated with mechanical systems to assure maximum accessibility to all systems. Where conduit crosses expansion joints, provide suitable expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means. For conduits greater than 2 1/2 inches inside diameter, provide supports to resist forces of 0.5 times the equipment weight in any direction and 1.5 times the equipment weight in the downward direction.

3.1.5.5 Directional Changes in Conduit Runs

Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped

conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.

3.1.5.6 Locknuts and Bushings

Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use at least minimum single locknut and bushing. Locknuts shall have sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits, and provide insulating type where required by NFPA 70.

3.1.5.7 Flexible Connections

Provide flexible steel conduit between 3 and 6 feet in length for equipment subject to vibration, noise transmission, or movement. Install flexible conduit to allow 20 percent slack. Minimum flexible steel conduit size shall be 3/4 inch diameter. Provide liquidtight flexible conduit in wet and damp locations for equipment subject to vibration, movement or motors. Provide separate ground conductor across flexible connections.

3.1.5.8 Telecommunications and Signal System Pathway

Install telecommunications pathway in accordance with EIA TIA/EIA-569-A.

a. Horizontal Pathway: Size conduits as indicated.

3.1.6 Boxes, Outlets, and Supports

Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be cast-metal, hub-type when located in wet locations, when surface mounted on outside of exterior surfaces, and when specifically indicated. Boxes in other locations shall be sheet steel and nonmetallic boxes may be used with nonmetallic conduit system. Each box shall have volume required by NFPA 70 for number of conductors enclosed in box. Boxes for mounting lighting fixtures shall be minimum 4 inches square, or octagonal, except that smaller boxes may be installed as required by fixture configurations, as approved. Provide gaskets for cast-metal boxes installed in wet locations and boxes installed flush with outside of exterior surfaces. Fasten boxes and supports with bolts and expansion shields on concrete, and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for fixture support. When penetrating reinforced concrete members, avoid cutting reinforcing steel.

3.1.6.1 Boxes

Boxes for use with raceway systems shall be minimum 1 1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets shall be minimum 4 inches square, except that 4 by 2 inch boxes may be used where only one raceway enters outlet.

3.1.6.2 Pull Boxes

Construct of at least minimum size required by NFPA 70. Provide boxes with screw-fastened covers. Where several feeders pass through common pull box, tag feeders to indicate clearly electrical characteristics, circuit number, and panel designation.

3.1.7 Conductor Identification

Provide conductor identification within each enclosure where tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, color coding shall be by factory-applied, color-impregnated insulation. For conductors No. 4 AWG and larger diameter, color coding shall be by plastic-coated, self-sticking markers; colored nylon cable ties and plates; or heat shrink-type sleeves.

3.1.8 Splices

Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller diameter with insulated, pressure-type connector. Make splices in conductors No. 8 AWG and larger diameter with solderless connector, and cover with insulation material equivalent to conductor insulation.

3.1.9 Covers and Device Plates

Install with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Install plates with alignment tolerance of 1/16 inch. Use of sectional-type device plates are not permitted. Provide gasket for plates installed in wet locations.

3.1.10 Grounding and Bonding

Provide In accordance with NFPA 70. Ground exposed, non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and nonmetallic raceways, and neutral conductor of wiring systems. Make ground connection to driven ground rods on exterior of building. Interconnect all grounding media in or on the structure to provide a common ground potential. This shall include electrical service as well as underground metallic piping systems.

3.1.10.1 Ground Rods

Provide cone pointed ground rods. The resistance to ground shall be measured using the fall-of-potential method described in IEEE STD 81. The maximum resistance of a driven ground shall not exceed 25 ohms under normally dry conditions. If this resistance cannot be obtained with a single rod,3 additional rods not less than 6 feet on centers, additional sections may be coupled and driven with the first rod. In high-ground-resistance, UL listed chemically charged ground rods may be used. If the resultant resistance exceeds 25 ohms measured not less than 48 hours after rainfall, notify the Contracting Officer who will decide on the number of ground rods to add.

3.1.10.2 Grounding Connections

Make grounding connections which are buried or otherwise normally inaccessible, by exothermic weld or compression connector.

a. Make exothermic welds strictly in accordance with the weld manufacturer's written recommendations. Welds which are "puffed up" or which show convex surfaces indicating improper cleaning are not acceptable. Mechanical connectors are not required at exothermic welds.

b. Make compression connections using a hydraulic compression tool to provide the correct circumferential pressure. Tools and dies shall be as recommended by the manufacturer. An embossing die code or other standard method shall provide visible indication that a connector has been adequately compressed on the ground wire.

3.1.10.3 Resistance

Maximum resistance-to-ground of grounding system shall not exceed 25 ohms under dry conditions. Where resistance obtained exceeds 25 ohms, contact Contracting Officer for further instructions.

3.1.11 Equipment Connections

Provide power wiring for the connection of motors and control equipment under this section of the specification.

3.2 FIELD FABRICATED NAMEPLATE MOUNTING

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.3 WARNING SIGN MOUNTING

Provide the number of signs required to be readable from each accessible side. Space the signs in accordance with NFPA 70E.

3.4 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces. Where field painting of enclosures for panelboards, load centers or the like is specified to match adjacent surfaces, to correct damage to the manufacturer's factory applied coatings, or to meet the indicated or specified safety criteria, provide manufacturer's recommended coatings and apply in accordance to manufacturer's instructions.

3.5 FIELD QUALITY CONTROL

Furnish test equipment and personnel and submit written copies of test results. Give Contracting Officer5 working days notice prior to each test.

3.5.1 Devices Subject to Manual Operation

Each device subject to manual operation shall be operated at least five times, demonstrating satisfactory operation each time.

3.5.2 600-Volt Wiring Test

Test wiring rated 600 volt and less to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 250,000 ohms.

3.5.3 Ground-Fault Receptacle Test

Test ground-fault receptacles with a "load" (such as a plug in light) to verify that the "line" and "load" leads are not reversed.

3.5.4 Grounding System Test

Test grounding system to ensure continuity, and that resistance to ground is not excessive. Test each ground rod for resistance to ground before making connections to rod; tie grounding system together and test for resistance to ground. Make resistance measurements in dry weather, not earlier than 48 hours after rainfall. Submit written results of each test to Contracting Officer, and indicate location of rods as well as resistance and soil conditions at time measurements were made.

-- End of Section --